

BEST AVAILABLE COPY

Access DB# 96801

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Ngoc-Yen Nguyen Examiner #: 69546 Date: June 17, 2003
Art Unit: 1754 Phone Number 308-2536 Serial Number: 09/940,438
Mail Box and Bldg/Room Location: CP3-9A15 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Doped precipitated silica

Inventors (please provide full names): Juergen Schubert, Klaus-Dieter Hellwig,
Astrid Muller

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for:

- Al-doped precipitated SiO_2 having a BET surface area of more than 300 m²/g, Al is distributed uniformly in the silica
- Process for making the Al-doped precipitated silica (Please see claim 10).

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

Searcher: EL NA Sequence (#) _____ STN \$186.28
Searcher Phone #: _____ AA Sequence (#) _____ Dialog _____
Searcher Location: _____ Structure (#) (1) Questel/Orbit _____
Date Searcher Picked Up: _____ Bibliographic (add) Dr.Link _____
Date Completed: 6-18-03 Litigation _____ Lexis/Nexis _____
Searcher Prep & Review Time: 10 Fulltext _____ Sequence Systems _____
Clerical Prep Time: _____ Patent Family _____ WWW/Internet _____
Online Time: 125 Other _____ Other (specify) _____

WHAT IS CLAIMED AS NEW AND IS INTENDED TO BE SECURED BY LETTERS
PATENT IS:

1. An aluminum-doped precipitated silica having a BET surface area of more than 300 m²/g, wherein aluminum is distributed uniformly in the silica.

5 2. The aluminum-doped precipitated silica of Claim 1, wherein the BET surface area is 350 to 800 m²/g.

3. The aluminum-doped precipitated silica of Claim 1, wherein the aluminum is in the form of Al₂O₃.

10 4. The aluminum-doped precipitated silica of Claim 1, having an Al₂O₃ content of from 0.05 to 0.5% by weight.

5. The aluminum-doped precipitated silica of Claim 1, having an Al₂O₃ content of from 0.05 to 0.25% by weight.

6. The aluminum-doped precipitated silica of Claim 1, wherein the silica is in the form of particles having an average size of less than 15 μm.

15 7. The aluminum-doped precipitated silica of Claim 1, wherein the silica is in the form of particles having an average size of 5 to 12 μm.

8. The aluminum-doped precipitated silica of Claim 1, having a DBP absorption of from 200 to 500 g/100 g.

20 9. The aluminum-doped precipitated silica of Claim 1, having a DBP absorption of from 250 to 350 g/100 g.

10. A process for preparing aluminum-doped precipitated silica, comprising:
a) heating a mixture of water and sodium silicate at a temperature of from 70 to 86°C and adding sulfuric acid until half of the sodium silicate is neutralized; next

b) aging the mixture for a time of from 30 to 120 minutes; next
c) adjusting the pH of the mixture with sulfuric acid to a range of from 3.0 to 7.0,
thereby precipitating the aluminum-doped silica; next
d) filtering the aluminum-doped silica from the mixture to form a filtercake and
5 washing the filtercake; next
e) drying and/or grinding the washed filtercake,
wherein an aluminum salt solution is metered into the mixture at step a) and/or step
c), the precipitated aluminum-doped silica has a BET surface of more than 300 m²/g, and the
aluminum is distributed uniformly in the aluminum-doped silica.

10 11. The process of Claim 10, wherein the aluminum salt solution is added to the
mixture of water and sodium silicate in step a) of the process, prior to adding the sulfuric
acid.

12. The process of Claim 10, wherein the aluminum salt solution is added
continuously during step a) and/or step c).

15 13. The process of Claim 10, wherein the aluminum salt solution is added in step c)
and prior to adding the sulfuric acid.

14. The process of Claim 10, wherein at least one or more of steps a), b), and c) are
carried out with shearing.

15. A coating comprising the aluminum-doped precipitated silica of Claim 1.

20 16. Paper coated with the coating of Claim 15

17. Plastic film coated with the coating of Claim 15.

18. Fabric screen coated with the coating of Claim 15.

19. A flatting agent comprising the silica of Claim 1.

[illegible]

=> file reg

FILE 'REGISTRY' ENTERED AT 10:30:52 ON 18 JUN 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2003 American Chemical Society (ACS)

=> display history full 11-

FILE 'REGISTRY' ENTERED AT 09:03:53 ON 18 JUN 2003

E SILICA/CN
L1 1 SEA SILICA/CN
E ALUMINA/CN
L2 1 S E3
L3 225882 SEA AL/ELS NOT C/ELS
L4 51751 SEA L3 NOT AYS/CI
E SODIUM SILICATE/CN
L5 577 SEA SODIUM#(W)SILICATE#
L6 520 SEA L5 NOT C/ELS

FILE 'HCA' ENTERED AT 09:11:24 ON 18 JUN 2003

L7 619951 SEA L1 OR (SILICON OR SI) (W) (OXIDE# OR DIOXIDE#) OR
SILICA# OR SIO2
L8 444476 SEA L2 OR (ALUMINUM# OR AL) (W) (OXIDE# OR TRIOXIDE#) OR
ALUMINA# OR AL2O3
L9 5836 SEA (PRECIP? OR PPT# OR PPTG# OR PPTN#) (3A) L7
L10 14623 SEA (ALUMINUM# OR AL) (3A) (DOPE# OR DOPING# OR DOPANT? OR
INTERSPERS? OR INTERCALAT? OR INTERMIX? OR IMMIX? OR
COMMIX? OR ADMIX?)
L11 5082 SEA L8 (3A) (DOPE# OR DOPING# OR DOPANT? OR INTERSPERS? OR
INTERCALAT? OR INTERMIX? OR IMMIX? OR COMMIX? OR ADMIX?)

FILE 'REGISTRY' ENTERED AT 09:23:45 ON 18 JUN 2003

E WATER/CN
L12 1 SEA WATER/CN
L13 1 SEA SULFURIC ACID/CN
L14 1 SEA WATER/CN

FILE 'HCA' ENTERED AT 09:26:17 ON 18 JUN 2003

L15 QUE L12 OR WATER? OR H2O OR AQ# OR AQUEOUS?
L16 120515 SEA L13 OR (SULFURIC# OR SULFURIC# OR SULPHURIC# OR
SULPHERIC#) (A) ACID#
L17 50129 S L6 OR (SODIUM# OR NA) (W) SILICATE# OR NA2SIO#
L18 833840 SEA L4 OR (ALUMINUM# OR AL) (A) SALT#
L19 8 S L9 AND L10
L20 5 SEA L9 AND L11
L21 436 S L16 AND L17 AND L18
L22 306 SEA L21 AND L15
L23 10 S L22 AND L9
L24 154 SEA L22 AND L7
L25 3 S L24 AND (L10 OR L11)
L26 875 SEA L7 AND L8 AND L9

L27 6 SEA L26 AND (L10 OR L11)
 L28 QUE DOPE# OR DOPING# OR DOPANT?
 L29 7 SEA L26 AND L28
 L30 156438 SEA L7 AND L8
 L31 2776 SEA L30 AND L28
 L32 QUE PRECIP? OR PPT# OR PPTG# OR PPTN#
 L33 86 SEA L31 AND L32
 L34 31 SEA L33 AND (L9 OR L10 OR L11)
 L35 24 SEA L33 AND L15
 L36 2 SEA L33 AND L16
 L37 4 SEA L33 AND L17
 L38 65 SEA L33 AND L18
 L39 22 SEA L35 AND L38
 L40 11 SEA L34 AND L35
 L41 27 SEA L34 AND L38
 L42 11 S L34 AND L39
 L43 22 SEA L35 AND L38
 L44 22 S L35 AND L39
 L45 22 SEA L38 AND L39
 L46 11 SEA L40 AND L41 AND L42 AND L43 AND L44 AND L45
 L47 21 SEA L19 OR L20 OR L25 OR L27 OR L29 OR L36 OR L37
 L48 15 SEA (L23 OR L46) NOT L47
 L49 16 SEA L34 NOT (L47 OR L48)

=> file hca

FILE 'HCA' ENTERED AT 10:31:23 ON 18 JUN 2003
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
 COPYRIGHT (C) 2003 AMERICAN CHEMICAL SOCIETY (ACS)

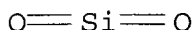
=> d l47 1-21 cbib abs hitstr hitind

L47 ANSWER 1 OF 21 HCA COPYRIGHT 2003 ACS
 138:172670 Doped absorbent materials with enhanced activity. Corzani, Italo; Rossi, Sergio; Rathousky, Jiri; Zukal, Arnost (The Procter & Gamble Company, USA). PCT Int. Appl. WO 2003013719 A1 20030220, 53 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US24698 20020806. PRIORITY: EP 2001-119181 20010808; EP 2002-7096 20020328.

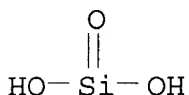
AB A method is disclosed for increasing the activity of doped inorg. adsorbent materials in the adsorption of selected solute species from a gas phase or from a fluid phase. The method consists in

selecting the type, or the amt., or the mol. dimensions of the dopant or dopants, or also in tailoring the pore structure of the doped inorg. adsorbent material through doping. Doped inorg. adsorbent materials produced with this method, and showing enhanced activity towards selected solute species, are also disclosed. The improved doped inorg. adsorbent materials are suitable in a no. of different fields.

IT 1344-28-1, **Alumina**, uses
(activated; in **doped** adsorbent)
RN 1344-28-1 HCA
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT 7631-86-9, **Silica**, uses
(in doped adsorbent)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

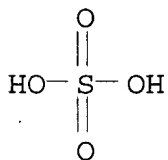


IT 6834-92-0 7664-93-9, **Sulfuric acid**, reactions
(in prepn. of doped adsorbent)
RN 6834-92-0 HCA
CN Silicic acid (H₂SiO₃), disodium salt (8CI, 9CI) (CA INDEX NAME)



2 Na

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B01J020-10
ICS B01J020-02; B01J020-08; B01J020-16; B01J020-32
CC 48-1 (Unit Operations and Processes)
Section cross-reference(s): 17, 51, 59, 61, 63
ST Doped absorbent; dehydration odor removal air purifn **water**
purifn decolorization

IT Aluminosilicates, uses
 Silica gel, uses
 (in doped adsorbent)
 IT Decolorization
 Dehydration
 Water purification
 (prepn. of doped adsorbent for)
 IT **1344-28-1, Alumina**, uses
 (activated; in **doped** adsorbent)
 IT **7631-86-9, Silica**, uses
 (in doped adsorbent)
 IT **6834-92-0 7664-93-9, Sulfuric**
 acid, reactions
 (in prepn. of doped adsorbent)

L47 ANSWER 2 OF 21 HCA COPYRIGHT 2003 ACS

138:172660 **Doped** adsorbent materials with enhanced activity
 for gas or liquid adsorbates. Corzani, Italo; Rossi, Sergio;
 Rathousky, Jiri; Zukal, Arnost (The Procter & Gamble Company, USA).
 Eur. Pat. Appl. EP 1283072 A1 20030212, 23 pp. DESIGNATED STATES:
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW.
 APPLICATION: EP 2001-119181 20010808.

AB A method is disclosed for increasing the absorption capacity from a
 gas-phase or from a fluid-phase by inorg. adsorbents by selection of
 suitable **dopants**. The method consists in selecting the
 type, or the amt., or the mol. dimensions of the **dopant** or
dopants, or also in tailoring the pore structure of the
doped inorg. adsorbent material through **doping**.
 Examples of **dopants** include colloidal sized metals,
 pptd. org. salts, and org. mols. The improved **doped**
 inorg. adsorbent materials are suitable in a no. of different fields
 where adsorption of one or more selected solute species from a free
 fluid phase is needed.

IT **1344-28-1, Alumina**, uses
 (adsorbent; **doped** adsorbent materials with enhanced
 activity for gas or liq.)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **1344-09-8P, Water Glass**
 (**doped** adsorbent materials with enhanced activity for
 gas or liq.)

RN 1344-09-8 HCA

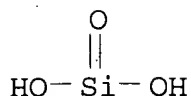
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **6834-92-0, Sodium metasilicate (Na₂SiO₃)**
 (**doped** adsorbent materials with enhanced activity for
 gas or liq.)

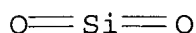
RN 6834-92-0 HCA

CN Silicic acid (H₂SiO₃), disodium salt (8CI, 9CI) (CA INDEX NAME)



●2 Na

IT 7631-86-9P, Silica, properties
 (doped; adsorbent materials with enhanced activity for
 gas or liq.)
 RN 7631-86-9 HCA
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM B01J020-10
 ICS B01J020-02; B01J020-08; B01J020-16; B01J020-32
 CC 48-1 (Unit Operations and Processes)
 ST **doped** adsorbent **silica** gel colloidal metal gold
 acetate salt; pore structure control **doped** adsorbent
 increased adsorption capacity; homodoping imprinting **doping**
silica gel adsorbent
 IT **Silica** gel, properties
 (Kieselgel 40 and Silicagel 123, plain and sodium acetate-
doped; **doped** adsorbent materials with enhanced
 activity for gas or liq.)
 IT Aluminosilicates, uses
 Silicates, uses
 (adsorbent; **doped** adsorbent materials with enhanced
 activity for gas or liq.)
 IT Odor and Odorous substances
 (adsorbents for control of; **doped** adsorbent materials
 with enhanced activity for gas or liq.)
 IT Health products
 (adsorbents for purifn. or delivery of; **doped** adsorbent
 materials with enhanced activity for gas or liq.)
 IT Food processing
 (adsorbents for; **doped** adsorbent materials with
 enhanced activity for gas or liq.)
 IT Metals, uses
 (colloidal **dopants**; **doped** adsorbent materials
 with enhanced activity for gas or liq.)
 IT Platinum-group metals
 (colloidal, **dopant**; **doped** adsorbent materials
 with enhanced activity for gas or liq.)
 IT Metallocenes
 Organometallic compounds
 (**dopant**; **doped** adsorbent materials with

- enhanced activity for gas or liq.)
- IT Nanoparticles
(**dopants**; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT Adsorbents
Adsorption
Pore structure
(**doped** adsorbent materials with enhanced activity for gas or liq.)
- IT Adsorption
(gas; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT **Dopants**
(nano-sized; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT Molecules
(size, **dopant** selection criterion; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT Body fluid
(treatment or purifn. adsorbents; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT **1344-28-1, Alumina**, uses
(adsorbent; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT 7439-92-1, Lead, uses 7439-96-5; Manganese, uses 7439-97-6, Mercury, uses 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-43-9, Cadmium, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses
(colloidal, **dopant**; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT 75-50-3, Trimethylamine, processes 107-92-6, Butanoic acid, processes
(**dopant** and adsorbate; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT 147-14-8, Copper phthalocyanine 2917-26-2, Hexadecylmercaptan
(**dopant**; **doped** adsorbent materials with enhanced activity for gas or liq.)
- IT **1344-09-8P**, Water Glass
(**doped** adsorbent materials with enhanced activity for gas or liq.)
- IT **6834-92-0**, Sodium metasilicate (Na_2SiO_3)
(**doped** adsorbent materials with enhanced activity for gas or liq.)
- IT 75-18-3, Dimethyl sulfide 110-86-1, Pyridine, processes
(**doped** adsorbent materials with enhanced activity for gas or liq.)
- IT **7631-86-9P**, Silica, properties
(**doped**; adsorbent materials with enhanced activity for gas or liq.)
- IT 64-19-7, Acetic acid, reactions
(gelation agent and **dopant** precursor; **doped**

adsorbent materials with enhanced activity for gas or liq.)
 IT 127-09-3, Sodium acetate
 (pptd. dopant; doped adsorbent
 materials with enhanced activity for gas or liq.)

L47 ANSWER 3 OF 21 HCA COPYRIGHT 2003 ACS

138:139200 Method for applying a self-cleaning coating to textile materials. Oles, Markus; Nun, Edwin (Creavis Gesellschaft fuer Technologie und Innovation mbH, Germany). PCT Int. Appl. WO 2003008697 A2 20030130, 17 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2002-EP6122 20020605. PRIORITY: DE 2001-10135157 20010719.

AB The invention relates to a method by which means particles are non-permanently applied to all textile materials and items of clothing using a normal chem. cleaning process. In std. current chem. cleaning processes, perchloroethylene, tetrachloroethylene or heavy naphtha are predominantly used. A hydrophobic aerosil can be suspended in said solvents. Advantageously, the solvents used are suitable for most items of clothing. When a small percentage of the particles is added to said solvents/detergents and items of clothing are cleaned with said suspension, a non-permanent, dirt-repelling layer is directly applied during the chem. cleaning of the textile material. Typical particles are minerals, metal oxides, powd. metals, pigments, pyrogenic silicic acid, pptd. silicic acid, Al2O3, silica, doped silicates, pyrogenic silicates, and powd. polymers.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses (powd.; applying self-cleaning coatings to textiles during cleaning with solvents contg. powders)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IC ICM D06H

CC 46-5 (Surface Active Agents and Detergents)
 Section cross-reference(s): 40, 42

ST dry cleaning solvent powd contg; polymer powder self cleaning coating textile; silica powder self cleaning coating

textile; **alumina** powder self cleaning coating textile;
silicic acid powder self cleaning coating textile; pigment powder
self cleaning coating textile; metal powder self cleaning coating
textile; mineral powder self cleaning coating textile; oxide metal
powder

IT 1343-98-2, Silicic acid 1344-28-1, **Alumina**, uses
7631-86-9, **Silica**, uses

(powd.; applying self-cleaning coatings to textiles during
cleaning with solvents contg. powders)

L47 ANSWER 4 OF 21 HCA COPYRIGHT 2003 ACS

137:270671 Manufacture of inorganic microparticle having specific grain
shape and small grain diameter, inorganic microparticle, rare earth
element-activated halogenated barium phosphor, and radiation image
conversion panel. Matsumoto, Hiroshi (Fuji Photo Film Co., Ltd.,
Japan). Jpn. Kokai Tokkyo Koho JP 2002274844 A2 20020925, 11 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-74391 20010315.

AB The process comprises forming a crystal or a ppt. in a soln. contg.
.gtoreq.1 inorg. compd. by adding a solid material virtually insol.
in the soln. to promote crystn. or pptn., and sepg. the crystal or
the ppt. The solid material functions as a crystn. or pptn.
promoting agent. The soln. is based on a mixt. made up of an aq.
soln. contg. BaI2 and an aq. soln. contg. a fluoride such as NH4F at
[Ba].ltoreq.3.0 mol/L and a F/Ba mol ratio .ltoreq.1. The inorg.
microparticle has an aspect ratio 0.5-2, and is represented by
BaFI:xLn (Ln = Ce, Pr, Sm, Eu, Tb, Dy, Ho, Nd, Er, Tm, Yb; and
0<x.ltoreq.0.2). The rare earth element-activated halogenated
barium phosphor is manufd. from above inorg. microparticle. Also
claimed is the radiation image conversion panel (luminescent screen)
having a phosphor layer which is made from the rare earth
element-activated halogenated barium phosphor. The phosphor having
a specific grain shape and a small grain diam. provided excellent
image characteristics.

IT 1344-28-1, **Alumina**, uses 7631-86-9,
Silica, uses

(crystn. or pptn. promoting agent for prepn. of
phosphor microparticle used for luminescent screen)

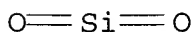
RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C01F011-20

ICS B01D009-02; C01F011-22; C09K011-00; C09K011-08; C09K011-61;
G01T001-00; G21K004-00

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

Section cross-reference(s): 73, 75

- IT Fluoropolymers, uses
Silica gel, uses
 (crystn. or pptn. promoting agent for prepn. of phosphor
 microparticle used for luminescent screen)
- IT Luminescent screens
 Phosphors
 (phosphor microparticle from Eu-**doped** barium halide for
 luminescent screen)
- IT 1344-28-1, **Alumina**, uses 7631-86-9,
Silica, uses 9002-84-0, PTFE 24937-79-9, PVDF
 (crystn. or pptn. promoting agent for prepn. of
 phosphor microparticle used for luminescent screen)
- IT 7440-53-1, Europium, uses
 (**dopant**; prepn. of phosphor microparticle for
 luminescent screen)
- IT 59466-43-2DP, Barium fluoride iodide, **doped** with europium
 112286-11-ODP, Barium bromide fluoride iodide (BaBr_{0.85}FI_{0.15}),
doped with europium
 (prepn. of phosphor microparticle for luminescent screen)

L47 ANSWER 5 OF 21 HCA COPYRIGHT 2003 ACS

137:251572 Inorganic acicular bodies and method for manufacture.
 Vartuli, James Scott; Venkataramani, Venkat Subramaniam (USA). U.S.
 Pat. Appl. Publ. US 2002141926 A1 20021003, 9 pp. (English).
 CODEN: USXXCO. APPLICATION: US 2001-681405 20010330.

AB Acicular bodies of a metal compd. are produced by slowly
pptg. an org. salt of the metal from a soln. of an ester of
 a dicarboxylic acid having C1-5 and firing the ppt. in an
 oxidizing atm. These acicular bodies have a cross-sectional
 dimension <20 .mu.m and are useful for providing reinforcement of a
 larger ceramic body. Acicular bodies of rare-earth metal oxides
 also are useful in reinforcing x-ray scintillator bodies without
 diminishing their luminescent capacity.

IT 1344-28-1P, **Alumina**, preparation
 7631-86-9P, **Silica**, preparation
 (ceramic matrix and reinforcement; manuf. of acicular ceramics
 suitable as reinforcement in ceramic composites)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

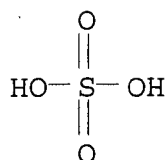
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 7664-93-9, **Sulfuric acid**, reactions
 (manuf. of acicular ceramics suitable as reinforcement in ceramic
 composites)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C04B035-10
ICS C04B035-14; C04B035-50
NCL 423263000
CC 57-2 (Ceramics)
Section cross-reference(s): 56, 76
IT **1344-28-1P, Alumina**, preparation
7631-86-9P, Silica, preparation
(ceramic matrix and reinforcement; manuf. of acicular ceramics suitable as reinforcement in ceramic composites)
IT 7440-00-8, Neodymium, uses 7440-10-0, Praseodymium, uses
7440-19-9, Samarium, uses 7440-53-1, Europium, uses 7440-64-4, Ytterbium, uses
(**dopant**; manuf. of acicular ceramics suitable as reinforcement in ceramic composites)
IT 64-19-7, Acetic acid, reactions 77-92-9, Citric acid, reactions
95-92-1, Diethyl oxalate 110-15-6D, Succinic acid, esters
110-94-1D, Glutaric acid, esters 141-82-2D, Malonic acid, esters
144-62-7D, Oxalic acid, esters 553-90-2, Dimethyl oxalate
1314-36-9, Yttria, reactions 2050-60-4, Dibutyl oxalate
7647-01-0, Hydrochloric acid, reactions **7664-93-9, Sulfuric acid**, reactions
7697-37-2, Nitric acid, reactions 12064-62-9, Gadolinium oxide (Gd₂O₃)
(manuf. of acicular ceramics suitable as reinforcement in ceramic composites)

L47 ANSWER 6 OF 21 HCA COPYRIGHT 2003 ACS

137:65297 Doped **precipitate silica** suspensions with low-particle-size distribution and their use as a paper filler. Lafon, Marie-Odile; Eychenne-Baron, Christophe (Rhodia Chimie, Fr.). PCT Int. Appl. WO 2002051750 A1 20020704, 23 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (French). CODEN: PIXXD2. APPLICATION: WO 2001-FR4193 20011224. PRIORITY: FR 2000-17119 20001227.

AB The invention concerns a **ppt. SiO₂** suspension; .gtoreq.1 metal element at least divalent is bonded to the SiO₂ surface. The silica particles have a median diam. of <2 .mu.m. The invention further concerns the use of the suspension as a paper filler and more particularly for enhancing printing properties.

IC ICM C01B033-193
ICS C09C001-30; D21H017-69; D21H021-52
CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 43
ST doped **silica ppt** prepn; paper filler
aluminum doped silica ppt
IT Paper
(prepn. of doped **ppt. silica** suspensions with
low-particle-size distribution as filler for)
IT 7429-90-5, **Aluminum**, uses
(**dopant** for **ppt. silica** suspensions
with low-particle-size distribution)
IT 1344-09-8, Sodium silicate
(in prepn. of doped **ppt. silica** suspensions
with low-particle-size distribution)
IT 7664-93-9, Sulfuric acid, uses 10043-01-3, Aluminum sulfate
(in prepn. of doped **ppt. silica** suspensions
with low-particle-size distribution)
IT 7631-86-9P, Silica, preparation
(prepn. of doped **ppt. silica** suspensions with
low-particle-size distribution)

L47 ANSWER 7 OF 21 HCA COPYRIGHT 2003 ACS
137:34690 Metal-doped **precipitated silica**. Lindner,
Gottlieb-Georg; Mueller, Astrid (Degussa A.-G., Germany). Eur. Pat.
Appl. EP 1215171 A2 20020619, 12 pp. DESIGNATED STATES: R: AT, BE,
CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT,
LV, FI, RO, MK, CY, AL, TR. (German). CODEN: EPXXDW. APPLICATION:
EP 2001-125619 20011026. PRIORITY: DE 2000-10062449 20001214.

AB Metal-doped, **pptd. SiO₂** with the metal atoms
largely embedded in the SiO₂ structure, useful in prodn. of paper,
is **doped** with **Al**, Zr, Zn, Ti, P, Cr, V, Sc, Ga,
In, Fe, Ag, Mn, Co, Ni, or Cu and has sp. surface >300 m²/g and
surface concn. of dopant atoms .ltoreq.0.05 mmol/m². Pptn. of Na
silicate in the presence of Zr carbonate by H₂SO₄ at pH 5.8,
acidification to pH 3, washing and drying the **ppt.**, and
milling gave **SiO₂** with sp. surface 519 m²/g, ZrO₂ content
1.49%, and surface Zr concn. 2.33 .mu.mol/m². Use of the products
in paper prodn. is exemplified.

IC ICM C01B033-193
ICS D21H019-40; B41M005-00; D06P001-673; D06M011-79
CC 43-7 (Cellulose, Lignin, Paper, and Other Wood Products)
ST **silica pptd** metal doping; zirconium doping
silica pptd; paper manuf silica metal doped
IT Metals, uses
(dopants; metal-doped **pptd. silica**)
IT Paper
(metal-doped **pptd. silica** for use in paper
prodn.)
IT 7429-90-5, **Aluminum**, uses 7439-89-6, Iron, uses
7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-20-2,
Scandium, uses 7440-22-4, Silver, uses 7440-32-6, Titanium, uses

*copending
appl.*

7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-74-6, Indium, uses 7723-14-0, Phosphorus, uses
(**dopant**; metal-doped **pptd. silica**)

IT 7631-86-9, **Silica**, uses
(metal-doped **pptd. silica**)

L47 ANSWER 8 OF 21 HCA COPYRIGHT 2003 ACS

136:281535 Preparation and properties of **alumina-doped precipitated silica** as fillers and dye coatings.

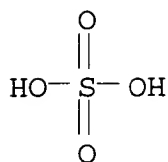
Schubert, Juergen; Hellwig, Klaus-Dieter; Mueller, Astrid (Degussa A.-G., Germany). Eur. Pat. Appl. EP 1193220 A1 20020403, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP 2001-119007 20010807. PRIORITY: DE 2000-10048616 20000930.

AB The invention concerns **aluminum-doped pptd. silicic acid**, in which the silicic acid particles have a BET surface area of >300 m²/g, particle size <15 .mu.m, a **Al₂O₃** content of 0.05-0.5 wt.%, and a DBP-uptake value of 200-500 g/100 g, and in which the **aluminum salt** (e.g., **Al₂O₃**) is evenly distributed in the silicic acid particles. The **silica** is co-**pptd.** with an aluminum compd. in the following steps: (1) mixing and heating an **aq. sodium silicate** soln. to 70-86.degree. and adding enough H₂SO₄ to neutralize half of the **Na silicate**, (2) aging the mixt. for 30-120 min, (3) adding more **aq. H₂SO₄** to a pH of 3.0-7.0, (4) the mixt. is filtered and the filter cake washed, (5) the washed filter cake is spray dried and milled, in which an **aq. aluminum salt** soln. is added in small portions in steps (1) and/or (3). The **alumina-doped pptd. silica** has uses as fillers, matting agents, and dye coatings for lacquers, paper, foils, and canvas.

IT 10043-01-3, Aluminum sulfate
(**alumina** source; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)

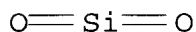
RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)

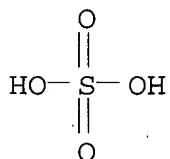


2/3 Al

IT 1344-28-1, Alumina, properties
(dopant, co-pptd. with silica;
prepn. and properties of alumina-doped
pptd. silica as fillers and dye coatings)
RN 1344-28-1 HCA
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT 7631-86-9P, Silica, preparation
(pptd., manuf. of; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

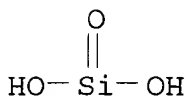


IT 7664-93-9, Sulfuric acid, uses
(pptg. agent; prepn. and properties of alumina
-doped pptd. silica as fillers and
dye coatings)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 1344-09-8, Sodium silicate
6834-92-0
(silica source; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 6834-92-0 HCA
 CN Silicic acid (H₂SiO₃), disodium salt (8CI, 9CI) (CA INDEX NAME)



2 Na

- IC ICM C01B033-193
- CC 49-8 (Industrial Inorganic Chemicals)
- ST **alumina doped pptd silica**
 filler dye; paper filler **alumina doped silica**
- IT Dyes
 (coatings, formulations for; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT Canvas
 Paper
 (formulations for; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT Fillers
 Matting agents
 (prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT 10043-01-3, Aluminum sulfate
 (**alumina** source; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT 9002-89-5, Polyvinyl alcohol
 (coatings, formulations for; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT 1344-28-1, Alumina, properties
 (dopant, co-pptd. with **silica**; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT 7631-86-9P, Silica, preparation
 (pptd., manuf. of; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT 7664-93-9, Sulfuric acid, uses
 (pptg. agent; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)
- IT 1344-09-8, Sodium silicate

6834-92-0

(silica source; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)

L47 ANSWER 9 OF 21 HCA COPYRIGHT 2003 ACS

135:341136 Preparation of luminescent-doped inorganic nanoparticles and usage as labels for biomolecule probes. Hoheisel, Werner; Petry, Christoph; Bohmann, Kerstin; Haase, Markus; Riwozki, Karsten (Bayer A.-G., Germany). Ger. Offen. DE 10106643 A1 20011108, 12 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2001-10106643 20010212. PRIORITY: DE 2000-10021674 20000505.

AB The invention concerns luminescent-doped inorg. nanoparticles that are used as labels for affinity mols. e.g. nucleic acids, antibodies, proteins, etc.; affinity mols. are directly attached to the nanoparticles or via linker groups, e.g. thiols, amines, imidazoles, mol. self-assemblies, etc. Thus europium-doped phosphoric acid, lanthanum(3+) salt (1:1) was prepd. by a previously described wet chem. method; the obtained milky dispersion was centrifuged, dialyzed and dried to obtain the desired particle size. The LaPO₄:Eu nanoparticles were coated with silica using a basic sodium water glass soln.; sepd. by ethanol pptn., centrifugation, ultrasound dispersion, decanting and drying. The silica coated nanoparticles were amine-activated with 3-aminopropyltriethoxysilane and treated with sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate (sulfo-SMCC) crosslinker. Antibodies to .alpha.-actin were thiol-activated in a 2-iminothiolane soln. and incubated with the treated luminescent-doped inorg. nanoparticles; the obtained luminescent probes were used to visualize actin filaments in rabbit muscles by confocal laser scanning microscopy.

IT 1344-28-1, Alumina, uses
(Eu-doped; prepn. of luminescent-doped inorg.
nanoparticles and usage as labels for biomol. probes)

RN 1344-28-1 HCA

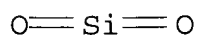
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7631-86-9, Silicon dioxide, uses
(doped with Dy, Al; prepn. of luminescent-doped
inorg. nanoparticles and usage as labels for biomol. probes)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 1344-09-8, Water glass
(prepn. of luminescent-doped inorg. nanoparticles and
usage as labels for biomol. probes)

RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM G01N033-52
ICS G01N033-58; C12Q001-00; C12Q001-68

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 73

ST luminescent **doped** inorg nanoparticle biomol probe
fluorescence microscopy

IT Ketones, uses
(1,2-diketones; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Luminescence
(UV; prepn. of luminescent-**doped** inorg. nanoparticles
and usage as labels for biomol. probes)

IT Surfactants
(anionic; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Heterocyclic compounds
(azolides; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Surfactants
(cationic; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Rare earth metals, uses
(**dopant**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Phosphates, uses
(**doped** with Ce,Tb,of a lanthanide or their mixt.;
prepn. of luminescent-**doped** inorg. nanoparticles and
usage as labels for biomol. probes)

IT Imidic acids
(esters; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Group IIIA element compounds
(gallates; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Radioluminescence
(gamma-ray; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Group IVA element compounds
(germanates; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Phosphates, uses
(halide; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Immunoassay
(luminescence; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Group VB element compounds
(niobates; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

IT Heterocyclic compounds
(nitrogen, five-membered, imidazoles; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for

- biomol. probes)
- IT Sulfides, uses
 - (oxy; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Halides
 - (phosphates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Amines, reactions
 - (polyamines, nonpolymeric; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Carboxylic acids, reactions
 - (polycarboxylic; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Animal tissue
 - Biochemical molecules
 - Blood analysis
 - Blood plasma
 - Blood serum
 - Cathodoluminescence
 - Cerebrospinal fluid
 - Dopants**
 - Fluorescence microscopy
 - Fluorescent substances
 - Fluorometry
 - Immobilization, biochemical
 - Light sources
 - Luminescence spectroscopy
 - Luminescent substances
 - Nanoparticles
 - Nucleic acid hybridization
 - Particle size
 - Plant tissue
 - Plasmids
 - Self-assembly
 - Sputum
 - Sulfhydryl group
 - Urine analysis
 - X-ray luminescence
 - (prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Alkali metal halides, uses
 - Anhydrides
 - Arsenates
 - Aryl halides
 - Borates
 - Haptens
 - Isothiocyanates
 - Molybdates
 - Oxides (inorganic), uses
 - Peptides, uses
 - Phosphates, uses
 - Polysaccharides, uses

- Selenides
- Silicates, uses
- Sulfates, uses
- Sulfides, uses
- Sulfonyl halides
 - (prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Antibodies
- Nucleic acids
- Probes (nucleic acid)
- Proteins, general, uses
- Thiols (organic), uses
 - (prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Amines, reactions
- Polysulfones, reactions
- Thioethers
 - (prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Diazonium compounds
 - (salts; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Selenides
 - (sulfo; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Group VB element compounds
 - (tantallates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Antibodies
 - (to .alpha.-actin; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Group VIB element compounds
 - (tungstates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Carbonyl compounds (organic), uses
 - (unsatd.; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Group VB element compounds
 - (vanadates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Surfactants
 - (zwitterionic; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT Actins
 - (.alpha.-; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 1314-98-3, Zinc sulfide (ZnS), uses
 - (Ag, Al, Cu, Mn, Tb, TbF₃, Eu, EuF₃, lanthanide **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
 - (Bi-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

- nanoparticles and usage as labels for biomol. probes)
- IT 145564-56-3, Calcium magnesium silicate ((Ca,Mg)(SiO₃))
(Ce or Ti **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 150927-51-8, Aluminum cerium magnesium terbium oxide
(Al₁₁Ce_{0.65}MgTb_{0.35}O₁₉) 186956-28-5, Aluminum magnesium oxide
(Al₁₁MgO₁₉)
(Ce, Tb **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 35361-71-8, Aluminum lithium strontium fluoride (AlLiSrF₆)
35362-46-0 371759-79-4, Aluminum calcium oxide silicate
(Al₂Ca₂O(SiO₃)₂)
(Ce-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
(Cu, Al, Ag, Ni **doped**; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for
biomol. probes)
- IT 12024-21-4, Gallium oxide (Ga₂O₃)
(Dy-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 21669-04-5, Barium bromide fluoride (BaBrF) 122656-71-7, Barium
bromide chloride fluoride (BaBr_{0.5}Cl_{0.5}F)
(Eu **doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 13718-55-3, Barium chloride fluoride (BaClF)
(Eu or Sm **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 1344-28-1, Alumina, uses 10377-51-2, Lithium
iodide (LiI) 12254-04-5, Aluminum barium magnesium oxide
(Al₁₀BaMgO₁₇) 12505-97-4, Boron strontium fluoride oxide
(B₁₂Sr₃F₂O₂₀) 37276-56-5, Calcium strontium chloride phosphate
(CaSr₉Cl₂(PO₄)₆) 55134-50-4, Aluminum barium magnesium oxide
(Al₁₆BaMg₂O₂₇) 71012-47-0, Aluminum barium magnesium oxide
(Al₁₄BaMgO₂₃) 115968-61-1, Vanadium yttrium oxide phosphate
(VO-1YO₀-4(PO₄)₀-1) 119537-26-7, Calcium magnesium sulfide
((Ca,Mg)S) 350480-93-2, Magnesium strontium metaphosphate oxide
((Mg,Sr)₂(PO₃)₂O) 371759-66-9, Aluminum barium magnesium oxide
(Al₂BaMgO₃) 371759-80-7
(Eu-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 13597-65-4, Zinc silicate (Zn₂SiO₄)
(Mn or As-**doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 7789-75-5, Calcium fluoride (CaF₂), uses
(Mn or Dy **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 7778-18-9, Calcium sulfate (CaSO₄)
(Mn or lanthanide **doped**; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for
biomol. probes)
- IT 10101-39-0

- (Mn, Pb, lanthanide **doped**; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for
biomol. probes)
- IT 7779-90-0, Zinc phosphate ($\text{Zn}_3(\text{PO}_4)_2$) 12007-60-2, Lithium borate
($\text{Li}_2\text{B}_4\text{O}_7$) 12159-91-0, Germanium magnesium fluoride oxide
($\text{Ge}_2\text{Mg}_8\text{F}_{20}\text{I}_1$) 12255-72-0, Magnesium arsenate oxide ($\text{Mg}_6(\text{AsO}_4)_2\text{O}_3$)
13776-74-4, Magnesium metasilicate (MgSiO_3) 28042-61-7, Magnesium
potassium fluoride (MgKF_3) 126344-47-6, Magnesium zinc fluoride
($(\text{Mg},\text{Zn})\text{F}_2$) 371759-74-9, Beryllium zinc oxide sulfide ($\text{BeZn}_4\text{O}_4\text{S}$)
371759-78-3, Cadmium borate oxide ($\text{Cd}(\text{BO}_3)\text{O}$)
(Mn-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 1306-23-6, Cadmium sulfide, uses
(Mn-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 12143-49-6, Tantalum yttrium oxide (TaYO_4)
(Nb-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 7790-75-2, Calcium tungstate (CaWO_4)
(Pb or Sm **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13573-11-0, Magnesium tungstate (MgWO_4)
(Pb or Sm-**doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13968-67-7, Barium silicate (BaSi_2O_5) 200212-20-0, Barium
magnesium zinc oxide silicate ($(\text{Ba},\text{Mg},\text{Zn})_3\text{O}(\text{SiO}_3)_2$)
(Pb-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 33846-79-6, Barium yttrium fluoride (BaY_2F_8)
(Pr, Tm, Er, Ce **doped**; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for
biomol. probes)
- IT 75535-31-8, Calcium chloride fluoride phosphate ($\text{Ca}_5(\text{Cl},\text{F})(\text{PO}_4)_3$)
(Sb, Mn **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 106804-21-1, Magnesium strontium phosphate ($(\text{Mg},\text{Sr})_3(\text{PO}_4)_2$)
(Sn-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 12031-43-5, Lanthanum oxide sulfide ($\text{La}_2\text{O}_2\text{S}$) 13875-40-6, Lanthanum
bromide oxide (LaBrO)
(Tb **doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 13466-21-2, Barium pyrophosphate ($\text{Ba}_2\text{P}_2\text{O}_7$)
(Ti-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 7789-17-5, Cesium iodide (CsI)
(Tl-**doped** or sodium-**doped**; prepn. of
luminescent-**doped** inorg. nanoparticles and usage as
labels for biomol. probes)
- IT 7681-82-5, Sodium iodide (NaI), uses
(Tl-**doped**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)

- IT 1314-13-2, Zinc oxide (ZnO), uses
(Zn,Si,Ga **doped**; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 7429-90-5, Aluminum, uses 7429-91-6, Dysprosium, uses 7439-92-1,
Lead, uses 7439-96-5, Manganese, uses 7440-00-8, Neodymium, uses
7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-10-0,
Praseodymium, uses 7440-19-9, Samarium, uses 7440-21-3, Silicon,
uses 7440-22-4, Silver, uses 7440-28-0, Thallium, uses
7440-30-4, Thulium, uses 7440-31-5, Tin, uses 7440-32-6,
Titanium, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic,
uses 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses
7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-52-0,
Erbium, uses 7440-53-1, Europium, uses 7440-55-3, Gallium, uses
7440-64-4, Ytterbium, uses 7440-66-6, Zinc, uses 7440-69-9,
Bismuth, uses 7440-74-6, Indium, uses
(**dopant**; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 76125-60-5, Aluminum strontium oxide (Al₁₄Sr₄O₂₅)
(**doped** Eu; prepn. of luminescent-**doped** inorg.
nanoparticles and usage as labels for biomol. probes)
- IT 75529-26-9, Gadolinium magnesium borate (GdMgB₅O₁₀)
(**doped** with Ce, Tb; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 7631-86-9, **Silicon dioxide**, uses
(**doped** with Dy, Al; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 113671-38-8, **Silicon oxide** (SiO₂)
(**doped** with Er, Al; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 31387-71-0, Barium ytterbium fluoride (BaYb₂F₈)
(**doped** with Er; prepn. of luminescent-**doped**
inorg. nanoparticles and usage as labels for biomol. probes)
- IT 12027-88-2, Yttrium silicate (Y₂SiO₅) 12340-04-4, Yttrium oxide
sulfide (Y₂O₂S)
(**doped** with Eu or other lanthanide; prepn. of
luminescent-**doped** inorg. nanoparticles and usage as
labels for biomol. probes)
- IT 12032-36-9, Magnesium sulfide (MgS)
(**doped** with Eu, Ce, Sm or combination; prepn. of
luminescent-**doped** inorg. nanoparticles and usage as
labels for biomol. probes)
- IT 13778-59-1, Lanthanum phosphate (LaPO₄)
(**doped** with Eu, Ce, Tb, Dy, Nd; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for
biomol. probes)
- IT 13566-12-6, Vanadium yttrium oxide (VYO₄)
(**doped** with Eu, Sm, Dy, In; prepn. of luminescent-
doped inorg. nanoparticles and usage as labels for
biomol. probes)
- IT 1314-36-9, Yttrium oxide (Y₂O₃), uses
(**doped** with Eu, Tb or other lanthanide; prepn. of
luminescent-**doped** inorg. nanoparticles and usage as

- labels for biomol. probes)
- IT 13568-56-4, Lutetium vanadium oxide (LuVO_4) 13628-52-9, Gadolinium vanadium oxide (GdVO_4) 124676-67-1, Gadolinium yttrium borate ($(\text{Gd}, \text{Y})(\text{BO}_3)$) 230313-54-9, Gallium yttrium borate ($(\text{Ga}, \text{Y})(\text{BO}_3)$) (**doped** with Eu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 7789-24-4, Lithium fluoride (LiF), uses (**doped** with Mg, Ti, Na or their combination; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes).
- IT 7783-40-6, Magnesium fluoride (MgF_2) (**doped** with Mn or lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13709-38-1, Lanthanum fluoride (LaF_3) (**doped** with Nd, Ce, Yb, Er, Tm; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 12031-63-9, Lithium niobate (LiNbO_3) (**doped** with Nd, Yb, Er; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 371759-81-8, Aluminum yttrium borate oxide ($\text{Al}_3\text{Y}(\text{BO}_3)_3\text{O}_3$) (**doped** with Nd, Yb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes).
- IT 69142-81-0, Gadolinium strontium silicate ($\text{Gd}_2\text{Sr}_3\text{Si}_6\text{O}_{18}$) (**doped** with Pb, Mn; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 25617-97-4, Gallium nitride (GaN) (**doped** with Pr, Eu, Er, Tm; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 12003-86-0, Aluminum yttrium oxide (AlYO_3) 26916-94-9, Lithium lutetium fluoride (LiLuF_4) (**doped** with Pr, Tm, Er, Ce; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 1314-96-1, Strontium sulfide (SrS) (**doped** with Sm, Ce, Eu, Ag, Cu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13812-81-2, Strontium pyrophosphate ($\text{Sr}_2\text{P}_2\text{O}_7$) (**doped** with Sn or Eu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 371759-82-9, Aluminum gallium yttrium oxide ($\text{Al}_3\text{Ga}_2\text{Y}_2\text{O}_{12}$) (**doped** with Tb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13759-29-0, Yttrium chloride oxide (YClO) 14118-26-4, Lanthanum sodium fluoride (LaNaF_4) 14118-34-4, Sodium yttrium fluoride (NaYF_4) 15640-94-5, Gadolinium sodium fluoride (GdNaF_4) 26874-36-2, Barium yttrium fluoride (BaYF_5)

- (**doped** with Yb, Er; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13709-49-4, Yttrium fluoride (YF₃)
(**doped** with Yb,Er, lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 12592-70-0, Gallium strontium sulfide (Ga₂SrS₄)
(**doped** with lanthanide, Pb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 12005-21-9, Aluminum yttrium oxide (Al₅Y₃O₁₂) 23108-36-3, Lithium yttrium fluoride (LiYF₄)
(**doped** with lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 1305-78-8, Calcium oxide, uses
(**doped** with lanthanides; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 12339-07-0, Gadolinium oxide sulfide (Gd₂O₂S)
(**doped** with tb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 20548-54-3, Calcium sulfide (CaS)
(lanthanide or Bi **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 58-85-5, Biotin 503-68-4D, Diazoacetic acid, deriv. 541-59-3D, Maleimide, deriv. 661-20-1D, Isocyanate, deriv. 7439-97-6D, Mercury, org. deriv., uses 11098-82-1, Aluminate 12233-56-6, Bismuth germanate (Bi₄Ge₃O₁₂) 20830-75-5, Digoxin 144419-68-1, Aluminum barium cerium magnesium oxide (Al₁₁(Ba,Mg)CeO₁₉)
(prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 113-00-8, Guanidine 120-72-9D, Indole, derivs. 1344-09-8, Water glass 6539-14-6, 2-Iminothiolane 64987-85-5
(prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 13708-63-9, Terbium fluoride (TbF₃) 13765-25-8, Europium fluoride (EuF₃)
(with ZnS; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
- IT 7440-27-9, Terbium, uses
(with mixed oxides; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

L47 ANSWER 10 OF 21 HCA COPYRIGHT 2003 ACS

133:201261 Thermal oxidation of high dose aluminum implanted silicon. Iacona, Fabio; Raineri, Vito; La Via, Francesco; Privitera, Vittorio; Gasparotto, Andrea; Rimini, Emanuele (CNR-IMETEM, Catania, 95121, Italy). Journal of the Electrochemical Society, 147(7), 2762-2765 (English) 2000. CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical Society.

AB The Al redistribution in the SiO₂/Si system was investigated during thermal oxidn. of high dose Al-implanted Si wafers. Only a small fraction of the implanted Al atoms remains elec. active in the substrate, and this amt. decreases when thicker oxides are grown. About 50% of the implanted Al is distributed inside the growing oxide at a concn. of .apprxeq.1020 cm⁻³. Al atoms are embedded in the SiO₂ layers through 2 distinct mechanisms: the dopant redistribution during oxidn., due to the low Al segregation coeff., and the inclusion of small Al-contg. ppts. formed inside the Si substrate due to the low Al soly. and its great reactivity with O. Furthermore, a relevant Al fraction evaps. during the 1st stages, including the temp. ramp-up, of the oxidn. process. Also, the inclusion of Al-contg. ppts. in the SiO₂ layer leads to the formation of very rough oxide surfaces.

CC 76-2 (Electric Phenomena)

IT Ion implantation

Precipitates

Segregation

(Al redistribution in SiO₂/Si system investigated during thermal oxidn. of high dose Al-implanted Si wafers)

IT 7429-90-5, **Aluminum**, properties

(**dopant**; Al redistribution in SiO₂/Si system investigated during thermal oxidn. of high dose Al-implanted Si wafers)

L47 ANSWER 11 OF 21 HCA COPYRIGHT 2003 ACS

131:203393 Effects of bicomponent additives on thermal decomposition of Al₂TiO₅. Kim, Sung Wook; Lee, Hyung Jik; Lee, Hong Lim (Department of Ceramic Engineering, Yonsei University, Seoul, 120-749, S. Korea). Yoop Hakhoechi, 36(6), 632-639 (Korean) 1999. CODEN: YPHJAP. ISSN: 0372-7807. Publisher: Korean Ceramic Society.

AB To fabricate thermally stabilized Al₂TiO₅ ceramics, equimolar .alpha.-Al₂O₃ and TiO₂ were mixed with bicomponent additives of 2, 5 and 10 mol% of equimolar MgO/ZrO₂, SiO₂/ZrO₂ and MgO/SiO₂ mixt. and pressed before sintering at 1500.degree.C for 2 h. Sintered bodies were heat-treated at 1150.degree.C for 24 h. X-ray diffractometer was used for the phase anal. and measurement of lattice parameters. MgO/SiO₂ **doped** Al₂TiO₅ ceramics was the most effective in suppression of thermal decompn., which seemed to be a combined effect of moderating of structural distortion due to substitution of Al³⁺ by Mg²⁺ and the reaction products of its pptd. oxide, Al₂O₃, and SiO₂.

IT 7631-86-9, **Silica**, uses

(sintering aid, bicomponent; effects of MgO/ZrO₂, SiO₂/ZrO₂ and MgO/SiO₂ bicomponent additives on thermal decompn. of Al₂TiO₅ ceramics)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 57-2 (Ceramics)
 ST aluminum titanate ceramic bicomponent additive thermal decompn;
silica bicomponent additive aluminum titanate ceramic
 thermal decompn; magnesia bicomponent additive aluminum titanate
 ceramic thermal decompn; zirconia bicomponent additive aluminum
 titanate ceramic thermal decompn
 IT Ceramics
 (aluminum titanate; effects of MgO/ZrO₂, **SiO₂**/ZrO₂ and
 MgO/**SiO₂** bicomponent additives on thermal decompn. of
 Al₂TiO₅ ceramics)
 IT Sintering aids
 (bicomponent; effects of MgO/ZrO₂, **SiO₂**/ZrO₂ and MgO/
SiO₂ bicomponent additives on thermal decompn. of Al₂TiO₅
 ceramics)
 IT Crystal structure
 Thermal decomposition
 (effects of MgO/ZrO₂, **SiO₂**/ZrO₂ and MgO/**SiO₂**
 bicomponent additives on thermal decompn. of Al₂TiO₅ ceramics)
 IT 12004-39-6, Aluminum titanium oxide (Al₂TiO₅)
 (ceramics; effects of MgO/ZrO₂, **SiO₂**/ZrO₂ and MgO/
SiO₂ bicomponent additives on thermal decompn. of Al₂TiO₅
 ceramics)
 IT 1309-48-4, Magnesium oxide (MgO), uses 1314-23-4, Zirconium oxide
 (ZrO₂), uses **7631-86-9, Silica**, uses
 (sintering aid, bicomponent; effects of MgO/ZrO₂, **SiO₂**
 /ZrO₂ and MgO/**SiO₂** bicomponent additives on thermal
 decompn. of Al₂TiO₅ ceramics)

L47 ANSWER 12 OF 21 HCA COPYRIGHT 2003 ACS
 127:224221 Environmentally safe inorganic coating material for asbestos
 fibers and asbestos-containing materials. Forkel, Klaus; Pitsch,
 Irene; Bertram, Rainer; Wihsmann, Fred Gustav (WITEGA Angewandte
 Werkstoff-Forschung Gemeinnuetzige GmbH Adlershof, Germany). Ger.
 Offen. DE 19609373 A1 19970904, 3 pp. (German). CODEN: GWXXBX.
 APPLICATION: DE 1996-19609373 19960229.
 AB The coating material consists of an acidic aq. or alc. soln. (pH
 2-6) of a basic **Al** salt, optionally in **admixt.**
 with acidic stable acidic SiO₂ sol solns. and/or unstable acidic
 SiO₂ hydrosols and/or nano- or micro-**SiO₂**, i.e.,
pptd. or fumed **SiO₂**. The inorg. coating renders
 the asbestos harmless.
 IC ICM C03C025-02
 ICS A62D003-00; D06M011-45; D06M011-79
 CC 57-6 (Ceramics)

L47 ANSWER 13 OF 21 HCA COPYRIGHT 2003 ACS
 127:139360 Foamable paste and multicomponent paste compositions for
 obtaining porous inorganic rigid foam products, the fireproofing
 porous rigid foam products obtained, and process for their
 formation. Krafft, Alfred-Peter (Krafft, Alfred-Peter, Germany).
 PCT Int. Appl. WO 9725291 A2 19970717, 49 pp. DESIGNATED STATES: W:

AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG.

(German). CODEN: PIXXD2. APPLICATION: WO 1997-DE87 19970109. PRIORITY: DE 1996-29600466 19960112; DE 1996-29616052 19960914.

AB The compns. comprise a pasty inorg. stone-forming component contg. .gtoreq.1 stone-forming components and, addnl., .gtoreq.1 compds. capable of releasing gas at pH 2-14 or .gtoreq.1 pH-changing compds., or no pH-changing compd. or no gas-releasing compd. For foaming and/or hardening the stone-forming components, the compns. addnl. contain .gtoreq.1 **water**-contg. pasty hardener and/or .gtoreq.1 pasty components capable of releasing gas and/or .gtoreq.1 pasty pH-changing components and/or a combination thereof, in an amt. sufficient for affecting porosity and/or consistency. The fireproofing porous rigid foam products have d. 40-1000 kg/m³, relative compressive strength 0.2-60 N/mm², and av. pore diam. 0.1-10 mm. The compns. have fire-resistance (DIN 4102 part 9) >180 min, and meet the requirements for building material class A1 (DIN 4102 part 1) and for fire resistance class S 180 and R 120 (DIN 4102 part 11). The ratio of vol. of the foamed products to the vol. of the above individual components is 1:1 to 10:1. The porous products are obtained by mixing the components in a 2- or 3-element static mixer whose length is such that the mixt. leaving the mixer is at least partially foamed paste that is introduced into a mold for further foaming and/or hardening. A typical mixt. contains fly ashes, Al, **water**, pH stabilizer, and **water** glass, talc, and Bentone.

IT 7631-86-9, **Silica**, uses
(amorphous, fume, stone-forming component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

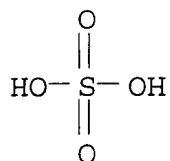
O=Si=O

IT 7732-18-5, **Water**, uses
(carrier; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
RN 7732-18-5 HCA
CN Water (8CI, 9CI) (CA INDEX NAME)

H₂O

IT 1344-09-8, **Sodium silicate**
7664-93-9, **Sulfuric acid**, uses
(pH-changing component; in multicomponent paste compns. for

manufg. porous inorg. rigid cellular fireproofing products)
 RN 1344-09-8 HCA
 CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7664-93-9 HCA
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 7429-90-5, Aluminum, uses
 (powd., gas-generating compd.; in multicomponent paste compns.
 for manufg. porous inorg. rigid cellular fireproofing products)
 RN 7429-90-5 HCA
 CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT 1302-74-5, Corundum, uses 1318-45-2, Dickite
 1344-28-1, Alumina, uses 11104-48-6, Calcium
 aluminate 12279-65-1, Nacrite 15123-81-6,
 Metakaolin
 (stone-forming component; in multicomponent paste compns. for
 manufg. porous inorg. rigid cellular fireproofing products)
 RN 1302-74-5 HCA
 CN Corundum (Al₂O₃) (9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 1318-45-2 HCA
 CN Dickite (Al₂(OH)₄(Si₂O₅)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O5Si2	1	20328-07-8
HO	4	14280-30-9
Al	2	7429-90-5

RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 11104-48-6 HCA
 CN Aluminum calcium oxide (9CI) (CA INDEX NAME)

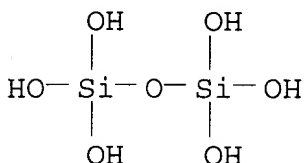
Component	Ratio	Component Registry Number
=====+=====+=====		
O	x	17778-80-2

Ca	x	7440-70-2
Al	x	7429-90-5

RN 12279-65-1 HCA
 CN Nacrite (Al₂(OH)₄(Si₂O₅)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O5Si2	1	20328-07-8
HO	4	14280-30-9
Al	2	7429-90-5

RN 15123-81-6 HCA
 CN Metakaolinite (Al₂(Si₂O₇)) (9CI) (CA INDEX NAME)



2 Al

IC ICM C04B028-02
 ICS C04B028-26; C04B038-02; C09K021-02; C09K021-06
 CC 58-4 (Cement, Concrete, and Related Building Materials)
 IT 1309-37-1, Ferric oxide, uses
 (admixts. with alumina and silica,
 stone-forming component; in multicomponent paste compns. for
 manufg. porous inorg. rigid cellular fireproofing products)
 IT 7631-86-9, Silica, uses
 (amorphous, fume, stone-forming component; in multicomponent
 paste compns. for manufg. porous inorg. rigid cellular
 fireproofing products)
 IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 7732-18-5,
 , Water, uses 35296-72-1, Butanol 62309-51-7, Propanol
 (carrier; in multicomponent paste compns. for manufg. porous
 inorg. rigid cellular fireproofing products)
 IT 64-19-7, Acetic acid, uses 77-92-9, uses 1305-62-0, Calcium
 hydroxide, uses 1310-58-3, Potassium hydroxide, uses 1310-73-2,
 Sodium hydroxide, uses 1312-76-1, Potassium silicate
 1344-09-8, Sodium silicate 7647-01-0,
 Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses
 7664-93-9, Sulfuric acid, uses
 7697-37-2, Nitric acid, uses 17194-00-2, Barium hydroxide
 (pH-changing component; in multicomponent paste compns. for
 manufg. porous inorg. rigid cellular fireproofing products)

- IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses
(powd., gas-generating compd.; in multicomponent paste compns.
for manufg. porous inorg. rigid cellular fireproofing products)
- IT 1302-74-5, Corundum, uses 1318-45-2, Dickite
1344-28-1, Alumina, uses 1344-95-2, Calcium silicate
11104-48-6, Calcium aluminate 11113-52-3, Calcium ferrite
12279-65-1, Nacrite 14378-12-2, Steatite 14807-96-6,
Talc, uses 15123-81-6, Metakaolin
(stone-forming component; in multicomponent paste compns. for
manufg. porous inorg. rigid cellular fireproofing products)
- L47 ANSWER 14 OF 21 HCA COPYRIGHT 2003 ACS
125:303013 Rubber compositions containing **aluminum-**
doped precipitated silica for use in
tire treads. Vanel, Robert (Michelin et Cie., Fr.). Eur. Pat.
Appl. EP 735088 A1 19961002, 12 pp. DESIGNATED STATES: R: AT, BE,
DE, ES, FR, GB, IT, LU. (French). CODEN: EPXXDW. APPLICATION: EP
1996-103827 19960312. PRIORITY: FR 1995-4077 19950329.
- AB The title compns., with decreased coupler requirements, contain
diene rubbers and **pptd. SiO₂** doped with 0.35-3%
Al. A compounded 25:75 butadiene rubber-SBR blend contg. 9.6 phr
coupler and 80 phr SiO₂ **doped** with 0.97% Al gave
vulcanizates with Shore A hardness 69.9, 100% modulus 2.04 MPa, 300%
modulus 2.63 MPa, tensile strength 19.7 MPa, elongation 500%, and
hysteresis loss (60.degree.) 25.0; vs. 69.5, 1.94, 2.48, 20.3, 526,
and 25.8, resp., with undoped SiO₂ and 12.8 phr coupler.
- IC ICM C08L009-04
ICS B60C001-00; C08L021-00; C08K003-36
- CC 39-13 (Synthetic Elastomers and Natural Rubber)
- ST filler rubber tire tread; silica filler rubber tire;
aluminum doping silica filler; SBR blend tire
filler; butadiene rubber blend filler
- IT Rubber, butadiene, properties
Rubber, butadiene-styrene, properties
Rubber, isoprene, properties
Rubber, natural, properties
(rubber compns. contg. **aluminum-doped**
pptd. silica for use in tire treads)
- IT Rubber, synthetic
(butadiene-isoprene-styrene, rubber compns. contg.
aluminum-doped pptd. silica
for use in tire treads)
- IT Tires
(treads, rubber compns. contg. **aluminum-doped**
pptd. silica for use in tire treads)
- IT 7631-86-9, Silica, properties
(**aluminum-doped**; rubber compns. contg.
aluminum-doped pptd. silica
for use in tire treads)
- IT 7429-90-5, Aluminum, properties
(**dopant**; rubber compns. contg. **aluminum-**
doped pptd. silica for use in tire

US 5,852,099

- treads)
- IT 9003-17-2 9003-31-0 9003-55-8
(rubber, rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)
- IT 26602-62-0, Butadiene-isoprene-styrene copolymer
(rubber; rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)
- L47 ANSWER 15 OF 21 HCA COPYRIGHT 2003 ACS
- 114:148621 Electron microscopy and EDX-microanalysis of photochromic silver halide glasses of the composition systems **alumina** -boron oxide-**silica** and sodium oxide-calcium oxide-**silica**. Rincon, J. M.; Marquez, H.; Rivera, E. (Inst. Ceram. Vidrio, CSIC, Madrid, Spain). Journal of Materials Science, 26(5), 1192-8 (English) 1991. CODEN: JMTSAS. ISSN: 0022-2461.
- AB The microstructure and microanal. study of 2 glasses contg. AgCl **pptd.** particles were carried out by TEM (replica method), SEM, and SEM/EDX (energy dispersive x-ray spectrometry). The compn. of these glasses **doped** with Ag halide and CuO was formulated from the **Al2O3-B2O3-SiO2** and Na2O-CaO-**SiO2** systems. In both glasses the seeds, nuclei, crystals, and matrix were analyzed, and the mean size and no. of crystals were evaluated from the TEM and SEM observations. The microstructure in both glasses is different because of the different shape of the Ag halide particles; the particles of the **Al2O3-B2O3-SiO2** glass are rounded while Na2O-CaO-**SiO2** shows square **pptd.** particles. Likewise, the darkening behavior is basically different; the **Al2O3-B2O3-SiO2** glass shows a higher darkening velocity than the Na2O-CaO-**SiO2** glass, showing for this glass a very small slope value.
- CC 57-1 (Ceramics)
Section cross-reference(s): 73
- IT Photochromism
(of glass, aluminoborosilicate and calcium **sodium silicate**, silver halide-contg., microstructure in relation to)
- IT Glass, oxide
(photochromic, calcium **sodium silicate**, silver halide-contg., microanal. and microstructure of)
- IT 7775-41-9, Silver fluoride 7783-90-6, Silver chloride, uses and miscellaneous 7785-23-1, Silver bromide
(photochromic glass contg. **pptd.**, microanal. and microstructure of)
- L47 ANSWER 16 OF 21 HCA COPYRIGHT 2003 ACS
- 110:50316 Extraction-photometric determination of **aluminum** in **doped** bismuth silicon oxide (Bi12SiO20) single crystals and charges for their preparation. Nechitailov, A. A.; Prokof'ev, V. V.; Krasin'kova, M. V. (Fiz.-Tekh. Inst. im. Ioffe, Leningrad, USSR). Zavodskaya Laboratoriya, 54(6), 26 (Russian) 1988. CODEN: ZVDLAU. ISSN: 0044-1910.

AB Al (5 .times. 10-4-1 .times. 10-1%) was detd. by spectrophotometry of its quinolinol complexes after matrix removal. Si was sepd. as silica gel. The bulk of Bi was pptd. as BiOCl. Residual Bi was extd. as diethyldithiocarbamate by CCl4 at pH 9.5.

CC 79-6 (Inorganic Analytical Chemistry)

IT 7440-21-3, Silicon, analysis
(sepn. of, from aluminum, by pptn. of silica gel)

L47 ANSWER 17 OF 21 HCA COPYRIGHT 2003 ACS

107:63532 Methods of analyzing refractory materials with elevated chromium contents, chrome **alumina**, chrome magnesite. Bastius, Helmut (Inst. Gesteinshuettenkd., RWTH Aachen, Aachen, D-5000, Fed. Rep. Ger.). CFI, Ceramic Forum International, 64(3-4), 81-4 (English/German) 1987. CODEN: CCFDD7. ISSN: 0173-9913.

AB Methods are described for the anal. of highly heat-resistant materials with elevated chrome contents (chrome-**Al2O3** and chrome-magnesite). The Al detn., as part of the chrome-**Al2O3** anal., involves pretreatment with H2SO4, oxidn. of the chrome fraction to form chromate and, after sepn. of the **SiO2**, pptn. as Al(OH)3 by gravimetry. The low-fraction constituents were detd. through pretreatment with H2SO4, dissoln. by orthophosphoric acid, followed by at. absorption spectroscopy, with disturbances due to high fraction Al and H3PO4 being eliminated by matrix adjustment. Chrome magnesite anal. is based on dissoln. with concd. H2SO4. The high-fraction Mg content is detd. gravimetrically as MgSO4 subsequent to the elimination of disturbances. The low-fraction constituents are detd. in sep. solns., again via at. absorption spectroscopy. Potential mutual disturbances on the part of various sample constituents are investigated on the basis of the results of direct detns. of sample solns. compared with those obtained from sample solns. **doped** with element std. soln. and tabulated.

CC 57-6 (Ceramics)

Section cross-reference(s): 79

ST chrome refractory analysis; **alumina** chrome refractory analysis; magnesite chrome refractory analysis

L47 ANSWER 18 OF 21 HCA COPYRIGHT 2003 ACS

97:201749 Manufacture of magnetic powder. (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57116705 A2 19820720 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-2311 19810110.

AB Magnetic powder is manufd. by coating the powd. Fe compds. (goethite, Fe2O3, Fe3O4, etc.) with an Al compd. and a Si compd., heating at 500-1000.degree., and reducing in H. Thus, an alk. soln. contg. a dispersion of Ni-diffused goethite particles was mixed with aq. Al2(SO4)3 and Na4SiO4, and sparged with CO2 to adjust pH .ltoreq.10 to ppt. hydrated **Al2O3** and **SiO2** on the particles. The coated particles were sepd., cleaned, dried, heated in air, and reduced in H at 500.degree.. The product was powd. Fe contg. Ni and Si, and having good magnetic properties.

IC B22F009-20
ICA H01F001-06
CC 55-4 (Ferrous Metals and Alloys)
Section cross-reference(s): 77
ST magnetic iron powder manuf redn; nickel **doping** magnetic powder manuf; silicon **doping** magnetic powder manuf; **aluminum doping** magnetic powder manuf
IT 7440-21-3, uses and miscellaneous
(**doping** with **aluminum** and nickel and, in magnetic powder manuf.)
IT 7440-02-0, uses and miscellaneous
(**doping** with **aluminum** and silicon and, in magnetic powder manuf.)
IT 7429-90-5, uses and miscellaneous
(**doping** with nickel and silicon and, in magnetic powder manuf.)
IT 1310-14-1
(iron powder from, **aluminum**-nickel-silicon **doped** magnetic, manuf. of)
IT 1309-37-1, uses and miscellaneous 1309-38-2, uses and miscellaneous
(iron powder from, **aluminum**-nickel-silicon **doped** magnetic, manuf. of,)
IT 7439-89-6P, preparation
(powder, **aluminum**-nickel-silicon **doped** magnetic, manuf. of, from goethite)

L47 ANSWER 19 OF 21 HCA COPYRIGHT 2003 ACS
81:6657 Catalysts by hydrothermal method. Jaffe, Joseph (Chevron Research Co.). U.S. US 3791963 19740212, 4 pp. Continuation-in-part of U.S. 3,652,457 (CA 77;115755g). (English). CODEN: USXXAM.
APPLICATION: US 1970-39173 19700520.

AB A cracking catalyst consisted of a synthetic layered cryst. clay-like aluminosilicate mineral in **admixture** with an amorphous **Al₂O₃-SiO₂** cogel. An aq. acidic soln. of AlCl₃ and HOAc were mixed with a dil. Na silicate soln. **Al₂O₃** and **SiO₂** were **pptd.** by the addn. of a NH₄OH soln. NH₄ bifluoride was added to provide 0.1-3% F. After filtration the slurry was partially dried to 25% solids, pelleted and aged for 0.5-2 hr at 1400 psig and 300.degree.. The pellets can be impregnated with catalytic metals as Ni, Co, Pt, Pd, and Re, for use in hydrocarbon conversions.

IC C10G
NCL 208111000
CC 67-1 (Catalysis and Reaction Kinetics)
ST **alumina** cracking catalyst hydrothermal; hydrocarbon cracking aluminosilicate catalyst

L47 ANSWER 20 OF 21 HCA COPYRIGHT 2003 ACS
67:75333 Sediments from acid volcanic waters and chemical differentiation. Naboko, S. I.; Fil'kova, E. M. Biulleten Vulkanologicheskoi Stantsii, Akademiia Nauk S.S.S.R., Laboratoriia

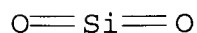
Vulkanologii, No. 42, 33-41 (Russian) 1966. CODEN: BYVKAA.

AB Various types of thermal waters exist simultaneously in areas of an active volcano: alk. Na-chloride, acid chloride-sulfate, and predominately sulfate. There is a gradual transition; the waters represent a single genetic series. The area of Mendeleev Volcano in Kunashir Island is a classical example of development of various types of thermal water and sediments. Geyserite (opal), kaolinite + opal, jarosite + Fe hydroxides, amorphous **silica**, S, S + pyrite with small admixts. of alunite, gypsum, and other minerals deposited from waters of various compns. in this area. Chem. differentiation was observed during pptn. of components from acid thermal water. The amts. of **SiO₂**, **TiO₂**, **Al₂O₃**, **MnO**, and **Na₂O** decreased and those of **Fe₂O₃**, **K₂O**, **P₂O₅**, **As₂O₃**, and **SO₃** increased in the sediments as one goes away from the outlet of the hydrothermal spring. Part of the trace elements had a tendency to conc. in the 1st sediments of **SiO₂** and **Al₂O₃** in the outlets of the spring (Ag, Sn, Cu, Ga, Sc, Y, Yb, Zr, and Sr). On the contrary, the Pb, V, In, Ni, and Ba enriched the jarosite and Fe hydroxide sediments further away. The following chem. groups of hydrous sediments were deposited from acid sulfate-chloride springs; (1) **SiO₂** + **TiO₂**, (2) **SiO₂** + **Al₂O₃** + **TiO₂**, (3) **SiO₂** + **Fe₂O₃** + **TiO₂**, (4) **SiO₂** + **Al₂O₃** + **Fe₂O₃** + **TiO₂**, (5) **Fe₂O₃** + (K, Na)₂O + **SO₃** + **P₂O₅**, and (6) **Fe₂O₃** + **P₂O₅**. Differentiation of components, which began to migrate simultaneously in acid sulfate-chloride water, resulted in a horizontal zoning of the sediments from spring outlet to its inflow into the river. The 1st sediment was rich in **SiO₂-Al₂O₃-TiO₂**, more distant sediments were rich in **Fe₂O₃-(K + Na)₂SO₃** (jarosite with small admixt. of **SiO₂** and **Al₂O₃**), and the most distant sediments contained Fe oxides hydrates. The ore components had a tendency to enrich the 1st amorphous **SiO₂** and **Al₂O₃** sediments. The **SiO₂** pptd. from acid sulfate-chloride waters, differed from the **SiO₂** sediments, pptd. from alk. overheated waters, in higher contents of **Al₂O₃** and **TiO₂**.

IT 7631-86-9P, preparation
(formation of, in sediments of Mendeleev Volcano, Kunashir Island)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, occurrence
(in sediments of Mendeleev Volcano, Kunashir Island)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 53 (Mineralogical and Geological Chemistry)

IT 1302-91-6P 1309-36-0P, iron, preparation 1318-74-7P, preparation

7631-86-9P, preparation 7704-34-9P, preparation
12207-14-6P 13397-24-5P, preparation 14639-88-4P
(formation of, in sediments of Mendeleev Volcano, Kunashir
Island)

IT 1309-37-1, occurrence 1313-59-3 1314-56-3 1327-53-3
1344-28-1, occurrence 1344-43-0 12136-45-7
(in sediments of Mendeleev Volcano, ~~Kunashir Island~~)

L47 ANSWER 21 OF 21 HCA COPYRIGHT 2003 ACS
45:2033 Original Reference No. 45:341g-h Coprecipitation of
silica-alumina gel. Schmerling, Louis (Universal
Oil Products Co.). US 2526907 19501024 (Unavailable). APPLICATION:
US .

AB An aq. soln. of an alkali metal silicate is **admixed** with
an aq. **alumina** sol contg. in soln. an org. acid (dissoch.
const. less than 1 times. 10-3). The silicate is hydrolyzed to an
aq. **silica** sol and, in time, an **alumina** and
silica co-gel is **pptd.**, which is useful as a
catalyst in promoting hydrocarbon-conversion reactions.

IT 7631-86-9, **Silica**
(colloid with **Al2O3**, copptn. of)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT 1344-28-1, **Alumina**
(colloids with **SiO2**)
RN 1344-28-1 HCA
CN Aluminum oxide (**Al2O3**) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 22 (Petroleum, Lubricants, and Asphalt)
IT Hydrocarbons
(conversion of, **Al2O3-SiO2** gel catalysts for)
IT Catalysts
(for hydrocarbon conversion, **Al2O3-SiO2** gel
composite)
IT 7631-86-9, **Silica**
(colloid with **Al2O3**, copptn. of)
IT 1344-28-1, **Alumina**
(colloids with **SiO2**)

=> d l48 1-15 cbib abs hitstr hitind

L48 ANSWER 1 OF 15 HCA COPYRIGHT 2003 ACS
137:355024 Procedure for the production of **precipitated**
silica and silicates by acid precipitation of silicates
under constant cation excess. Lindner, Gottlieb-Georg (Degussa Ag,
Germany). Ger. Offen. DE 10124298 A1 20021121, 20 pp. (German).
CODEN: GWXXBX. APPLICATION: DE 2001-10124298 20010517.

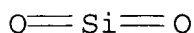
copying

*data is
not good*

AB Manuf. of **pptd. silica** or a silicate results by
 (1) dosing a Lewis or Broensted acid e.g. H₂SO₄ to a silicate soln.
 e.g. sodium **water** glass soln., (2) adjustment of pH up to
 7-3.0., (3) filtration, and (4) drying; whereby the step 1 is
 carried out under const. cation excess esp. Na⁺ or Na₂O excess.

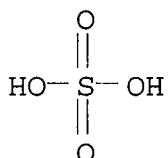
IT 7631-86-9P, **Silica**, preparation
 (pptd.; procedure for prodn. of **pptd.**
silica and silicates by acid pptn. of silicates under
 const. cation excess)

RN 7631-86-9 HCA
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 1344-09-8, Sodium **water** glass 7664-93-9,
Sulfuric acid, reactions
 (procedure for prodn. of **pptd. silica** and
 silicates by acid pptn. of silicates under const. cation excess)

RN 1344-09-8 HCA
 CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7664-93-9 HCA
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 7429-90-5D, **Aluminum, salts**
 (procedure for prodn. of **pptd. silica** and
 silicates by acid pptn. of silicates under const. cation excess
 keeping by addn. of)

RN 7429-90-5 HCA
 CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC ICM C01B033-187
 ICS A23K001-16; C11D007-14; C09D007-12; C08K003-36; A61K007-16;
 B01J021-08

CC 49-2 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 17, 46, 63

ST sodium **water** glass pptn **sulfuric acid**;
 silica manuf; silicate manuf

IT Paints
 (additives for; procedure for prodn. of **pptd.**
silica and silicates by acid pptn. of silicates under

- const. cation excess as carrier for)
- IT Precipitation (chemical)
 - (pH-controlled; procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
- IT Bronsted acids
 - Lewis acids
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
- IT Silicates, preparation
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
- IT Detergents
 - Perfumes
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
- IT Aminoplasts
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
- IT Catalyst supports
 - Dentifrices
 - Flocculants
 - Food additives
 - Primary battery separators
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess for)
- IT Electrolytes
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess keeping by addn. of)
- IT 7631-86-9P, **Silica**, preparation
 - (**pptd.**; procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
- IT 1344-09-8, Sodium **water** glass 7664-93-9, **Sulfuric acid**, reactions
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
- IT 50-21-5, Lactic acid, biological studies 67-48-1, Choline chloride 79-09-4, Propionic acid, biological studies 7664-38-2, Phosphoric acid, biological studies 9003-08-1, Melamine resin
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
- IT 64-18-6, Formic acid, biological studies
 - (procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
- IT 7429-90-5D, **Aluminum, salts**

7439-89-6D, Iron, salts 7439-95-4D, Magnesium, salts 7440-32-6D,
Titanium, salts 7440-67-7D, Zirconium, salts 7440-70-2D,
Calcium, salts

(procedure for prodn. of **pptd. silica** and
silicates by acid pptn. of silicates under const. cation excess
keeping by addn. of)

L48 ANSWER 2 OF 15 HCA COPYRIGHT 2003 ACS

134:89954 MgO-TiO₂-**doped alumina** ceramics with low
dielectric loss and improved sinterability prepared from low purity
alumina.. Fukushima, Hideko (Hitachi Metals, Ltd., Japan).
Eur. Pat. Appl. EP 1065190 A2 20010103, 17 pp. DESIGNATED STATES:
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP
2000-113724 20000628. PRIORITY: JP 1999-183429 19990629.

AB An **alumina** ceramic compn., comprising .ltoreq.10 wt.% of
MgO, and .gtoreq.0.2-10 wt.% TiO₂, with an **Al₂O₃** phase and
inevitable impurities (Na₂O, ZrO₂, Y₂O₃, Fe₂O₃, **SiO₂**, CaO,
Ga₂O₃ and Cr₂O₃) from low purity **alumina**, is described.
An Al₂TiO₅ phase is **pptd.** in grain boundaries in which it
surrounds the impurities. The **alumina** ceramic compn.
exhibits a Q factor .gtoreq.850 when measured at 10 GHz. Thus,
alumina, 0.05 wt.% magnesia and 2.0 wt.% titania powders
were wet ball-milled for 20 h in **water**, after which 1 wt.%
polyvinyl alc. was added to the slurries. After drying of the
slurries, the granular powder was die pressed before sintering at
1500.degree.C into a ceramic body having lattice parameters a =
4.7565 .ANG. and c = 12.9884 .ANG.. D. of the sintered
doped alumina was 3.93, with dielec. const. of
10.3 and a Q factor at 10 GHz of 2975.

IT 1344-28-1, **Alumina**, processes
(ceramics; MgO-TiO₂-**doped alumina** ceramics
with low dielec. loss and improved sinterability prepd. from low
purity **alumina**)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 12004-39-6, Aluminum titanium oxide (Al₂TiO₅)
(grain boundary phase; MgO-TiO₂-**doped alumina**
ceramics with low dielec. loss and improved sinterability prepd.
from low purity **alumina**)

RN 12004-39-6 HCA

CN Aluminum titanium oxide (Al₂TiO₅) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	5	17778-80-2
Ti	1	7440-32-6
Al	2	7429-90-5

IT 7631-86-9, **Silica**, occurrence

(impurities; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IC ICM C04B035-111

CC 57-2 (Ceramics)

Section cross-reference(s): 75, 76

ST **alumina** ceramic magnesia titania **dopant** crystal structure dielec property; aluminum titanate grain boundary phase **alumina** ceramic dielec loss; impurity **alumina** ceramic dielec loss magnesia titania **dopant**

IT Dielectric constant

Sintering

(MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT Dielectric loss

(Q-factor; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT Ceramics

(**alumina**; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT Crystal structure

(lattice parameters; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT Molding

(press, die pressing; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT Grain boundaries

(titanate phase; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT 1309-48-4, Magnesium oxide (MgO), uses 13463-67-7, Titanium oxide (TiO₂), uses

(additive; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT 1344-28-1, Alumina, processes

(ceramics; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT 12004-39-6, Aluminum titanium oxide (Al₂TiO₅)

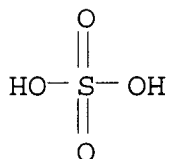
(grain boundary phase; MgO-TiO₂-**doped alumina**)

- ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)
- IT 9002-89-5, Polyvinyl alcohol
(granulating agent; MgO-TiO₂-**doped alumina**
ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)
- IT 1305-78-8, Calcium oxide (CaO), occurrence 1308-38-9, Chromium oxide (Cr₂O₃), occurrence 1309-37-1, Ferric oxide, occurrence 1313-59-3, Sodium oxide Na₂O, occurrence 1314-23-4, Zirconium oxide (ZrO₂), occurrence 1314-36-9, Yttria, occurrence **7631-86-9, Silica**, occurrence 12024-21-4, Gallium sesquioxide
(impurities; MgO-TiO₂-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)
-
- L48 ANSWER 3 OF 15 HCA COPYRIGHT 2003 ACS
- 124:180439 **Aqueous** suspensions of **precipitated silica**, continuous process for their manufacture, and their uses. Prat, Evelyne; Frouin, Laurent (Rhone-Poulenc Chimie, Fr.). PCT Int. Appl. WO 9601787 A1 19960125, 34 pp. DESIGNATED STATES: W: AM, AU, BB, BG, BR, BY, CA, CN, CZ, DE, EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TT, UA, US, UZ, VN; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (French). CODEN: PIXXD2. APPLICATION: WO 1995-FR901 19950705. PRIORITY: FR 1994-8430 19940707.
- AB The concn. of the suspensions is controlled at 10-40 wt.%, their viscosity is <4.10⁻² Pa.s at 50/s and the amt. of SiO₂ contained in the supernatant obtained after centrifugation of the suspension at 7500 rpm for 30 min is >50 wt.% (based on the SiO₂ in the suspension). The suspensions are manufd. by **pptg.** SiO₂ from an alkali metal silicate soln. with an acid, sepg. the SiO₂ to obtain a cake having solids content 10-40 wt.%, and disagglomerating the cake to obtain a low-viscosity suspension. The process is started with a heel of the alkali metal silicate. The av. particle size of agglomerates is <5 .mu.m and the disagglomeration factor is >3 mL. The suspensions are used for forming anticorrosive coatings, and prepn. of concrete, paper, and mineral-based adhesives.
- IT **1302-42-7, Sodium aluminate 1344-28-1, Alumina**,
uses
(continuous pptn. process for manufg. **aq. silica** suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)
- RN 1302-42-7 HCA
- CN Aluminate (AlO₂I-), sodium (9CI) (CA INDEX NAME)

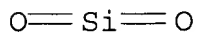


Na⁺

RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 IT 1344-09-8, Sodium silicate
 7664-93-9, Sulfuric acid, processes
 (continuous pptn. process for manufg. **aq.** silica
 suspensions for use in anticorrosive coatings, concrete, paper,
 and mineral-based adhesives)
 RN 1344-09-8 HCA
 CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7664-93-9 HCA
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 7631-86-9, Silica, uses
 (continuous pptn. process for manufg. **aq.**
 silica suspensions for use in anticorrosive coatings, concrete,
 paper, and mineral-based adhesives)
 RN 7631-86-9 HCA
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C01B033-141
 ICS C01B033-193; C09D005-08; C04B022-06; D21H017-68
 ICI C04B103-12
 CC 49-8 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 43, 55, 58
 ST **pptd silica** suspension anticorrosive coating;
 paper **pptd silica** suspension; concrete
pptd silica suspension; adhesive **pptd**
silica suspension
 IT Adhesives
 Concrete
 Paper

Suspensions

(continuous pptn. process for manufg. **aq.** silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)

IT Coating materials

(anticorrosive, continuous pptn. process for manufg. **aq.** silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)

IT 1302-42-7, Sodium aluminate 1344-28-1, Alumina, uses

(continuous pptn. process for manufg. **aq.** silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)

IT 1344-09-8, Sodium silicate

7664-93-9, Sulfuric acid, processes

(continuous pptn. process for manufg. **aq.** silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)

IT 7631-86-9, Silica, uses

(continuous pptn. process for manufg. **aq.** silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)

L48 ANSWER 4 OF 15 HCA COPYRIGHT 2003 ACS

119:282660 Effect of **silica**, sodium chloride, **alumina**, and ferric chloride on phase change behavior of supported and unsupported titania. Eskelinen, Pekka (Kemira Oy, Pori, 28840, Finland). Journal of Solid State Chemistry, 106(2), 213-18 (English) 1993. CODEN: JSSCBI. ISSN: 0022-4596.

AB The anatase-rutile phase change temps. in TiO₂ powders **pptd** from **aq.** TiCl₄ and the same deposited on muscovite and phlogopite micas were investigated. **Doping** with **Al₂O₃**, NaCl, and **SiO₂** increased the phase change temp. of supported and unsupported TiO₂, but **doping** with FeCl₃ .cntdot. 6H₂O decreased the beginning temp. of the phase change on unsupported TiO₂. The difference in phase change dependence on temp. between undoped TiO₂ supported by micas and unsupported TiO₂ was caused by diffusion of aluminum, silicon, and sodium ions from the mica substrate during the calcination step.

IT 7429-90-5D, Aluminum, ions, properties

(anatase-rutile transition of in relation to diffusion of, from mica substrate)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 75-7 (Crystallography and Liquid Crystals)

Section cross-reference(s): 65

IT 7429-90-5D, Aluminum, ions, properties 7440-21-3D, Silicon, ions, properties 7440-23-5D, Sodium, ions, properties

(anatase-rutile transition of in relation to diffusion of, from mica substrate)

L48 ANSWER 5 OF 15 HCA COPYRIGHT 2003 ACS

119:274525 Layered silicate Chu, Pochen; Kirker, Garry W.; Krishnamurthy, Sowmithri; Vartuli, James C. (Mobil Oil Corp., USA). U.S. US 5236681 A 19930817, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1989-443692 19891130.

AB Layered silicates such as magadiite and kenyaite are synthesized. The silica source is a fresh ppt. obtained by treating an aq . soln. of **sodium silicate** with **sulfuric acid**. This **silica ppt.** is not dried to reduce its activity prior to use.

~~IT~~ 7631-86-9, **Silica**, uses
(fresh **ppt.** from silicate soln., in layered silicates manuf.)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT 1344-28-1, Alumina, uses
(in layered silicates manuf.)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C01B033-32

NCL 423333000

CC 49-4 (Industrial Inorganic Chemicals)

ST magadiite layered silicate manuf silica; kenyaite layered silicate manuf silica; **silica ppt** layered silicate manuf

IT Silicates, preparation
(layered, manuf. of, fresh **silica ppt.** from silicate soln. in)

IT 7631-86-9, **Silica**, uses
(fresh **ppt.** from silicate soln., in layered silicates manuf.)

IT 1303-86-2, Boron trioxide, uses 1309-37-1, Ferric oxide, uses 1310-58-3, Potassium hydroxide, uses 1314-06-3, Nickel trioxide 1333-82-0, Chromium trioxide 1344-28-1, Alumina, uses 12024-21-4, Gallium trioxide
(in layered silicates manuf.)

IT 12285-88-0P, Magadiite 12285-95-9P, Kenyaite
(manuf. of layered, fresh **silica ppt.** from silicate soln. in)

L48 ANSWER 6 OF 15 HCA COPYRIGHT 2003 ACS

119:206518 Manufacture of hydrated silica for filler in paper manufacture. Eimaeda, Shigeru; Suzuki, Takao; Yamaguchi, Seiichi; Yamakawa, Shigeru (Oji Paper Co, Japan). Jpn. Kokai Tokkyo Koho JP 05178606 A2 19930720 Heisei, 12 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1991-358046 19911227.

Two drying
 AB A Na₂SO₄-contg. **aq. Na silicate** soln.
 is mixed with H₂SO₄ to 35-45% of the neutralization and to contain
 SiO₂ 6.0-8.0 and Na₂SO₄ 3.5-4.1 g/100 mL, heated at 85-95.degree.
 under stirring, and neutralized with H₂SO₄ to **ppt.**
 hydrated **SiO₂** that is filtered, dispersed in **water**
 , and powd. and/or classified to av. particle size 3-10 .mu.m. The
 hydrated SiO₂ is used as filler in the manuf. of paper to increase
 whiteness and opacity.

IT **1344-09-8, Sodium silicate**
 (neutralization of **aq.**, for hydrated silica, for filler
 in paper manuf.)

RN 1344-09-8 HCA

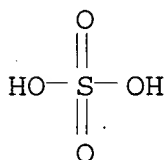
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-93-9, Sulfuric acid**, uses
 (neutralization with, of **aq. sodium**
silicate solns., for hydrated silica manuf. for filler in
 paper manuf.)

RN 7664-93-9 HCA

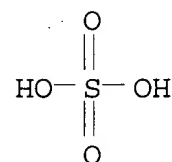
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **10043-01-3, Aluminum sulfate**
 (solns. contg., in hydrated silica manuf. from **aq.**
sodium silicate, for filler in paper manuf.)

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



● 2/3 A1

IC ICM C01B033-142

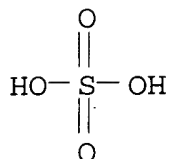
ICS D21H017-67

CC 49-2 (Industrial Inorganic Chemicals)

Section cross-reference(s): 43

IT Paper

- (fillers for, hydrated silica manuf. for, from **aq. sodium silicate**)
- IT Filling materials
(hydrated silica manuf. for, from **aq. sodium silicate**, for paper manuf.)
- IT Silica gel, preparation
(manuf. of, from **aq. sodium silicate**, for filler in paper manuf.)
- IT 1344-09-8, **Sodium silicate**
(neutralization of **aq.**, for hydrated silica, for filler in paper manuf.)
- IT 7664-93-9, **Sulfuric acid**, uses
(neutralization with, of **aq. sodium silicate** solns., for hydrated silica manuf. for filler in paper manuf.)
- IT 7757-82-6, Sodium sulfate, uses
(**sodium silicate** solns. contg., neutralization of, in hydrated silica manuf. for filler in paper manuf.)
- IT 10043-01-3, Aluminum sulfate
(solns. contg., in hydrated silica manuf. from **aq. sodium silicate**, for filler in paper manuf.)
- L48 ANSWER 7 OF 15 HCA COPYRIGHT 2003 ACS
- 119:30997 Zeolite production from DSP in red mud feedstock. Roach, G. I. D.; Cardile, C. M. (Kwinana Refinery, Alcoa of Australia, 6167, Australia). Light Metals (Warrendale, PA, United States) 51-7 (English) 1993. CODEN: LMPMDF. ISSN: 0147-0809.
- AB In the Bayer process a sodium aluminosilicate desilication product (DSP) is formed which is contained in the mud residue and ppts. as scale on plant equipment. The DSP can be dissolved in acid and the subsequent liquor neutralized to produce an alternative sodium aluminosilicate, zeolite type 4A, which has a com. market such as in detergent manuf. Aspects of this conversion process are reported. The rate of dissoln. of DSP in acid is so fast that the rate is invariably controlled by mass transfer considerations. The resulting acidic liquor is sufficiently stable for the leached residue mud to be sepd. without **pptn.** and gelation of **silica**. The purity of the type 4A zeolite produced from the acid liquor is affected by the soda:alumina:silica:water ratio, the mixing temp. of the acid liquor and caustic, and the crystn. temp. Conditions for optimum prodn. of type 4A zeolite from DSP are given. **Sulfuric acid** can be used in the conversion process. Spent cleaning acid used in DSP scale removal provides an extra source of acid and DSP. Iron is dissolved from residue mud which leads to coloration of the final product.
- IT 7664-93-9P, **Sulfuric acid**, preparation
(conversion by, of sodium aluminosilicate desilication product formed in red mud and in scale on alumina manufg. equipment, 4A type zeolite manuf. by)
- RN 7664-93-9 HCA
- CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 1344-00-9, Sodium aluminosilicate
 (desilication product, in red mud and in scale on alumina manuf.
 equipment, **sulfuric acid** conversion of, 4A
 type zeolite manuf. by)
 RN 1344-00-9 HCA
 CN Silicic acid, aluminum sodium salt (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Na	x	7440-23-5
Al	x	7429-90-5
Unspecified	x	1343-98-2

IT 1344-28-1P, Alumina, preparation
 (manuf. of, scale on equipment for, sodium aluminosilicate
 desilication product in, **sulfuric acid**
 conversion of, for 4A-type zeolite)
 RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 CC 49-4 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 54
 ST Bayer process desilication product zeolite manuf; red mud sodium
 aluminosilicate conversion zeolite; **sulfuric acid**
 conversion red mud zeolite
 IT Scale (coating)
 (on alumina manufg. equipment, sodium aluminosilicate
 desilication product in, **sulfuric acid**
 conversion of, for 4A-type zeolite)
 IT Red mud (Bayer process residue)
 (sodium aluminosilicate desilication product in, **sulfuric**
acid conversion of, 4A type zeolite manuf. by)
 IT Zeolites, preparation
 (4A, manuf. of, by **sulfuric acid** conversion
 of sodium aluminosilicate desilication product in red mud or in
 scale on alumina manufg. equipment)
 IT 7664-93-9P, **Sulfuric acid**, preparation
 (conversion by, of sodium aluminosilicate desilication product
 formed in red mud and in scale on alumina manufg. equipment, 4A
 type zeolite manuf. by)
 IT 1344-00-9, Sodium aluminosilicate
 (desilication product, in red mud and in scale on alumina manuf.
 equipment, **sulfuric acid** conversion of, 4A

type zeolite manuf. by)
 IT 1344-28-1P, Alumina, preparation
 (manuf. of, scale on equipment for, sodium aluminosilicate
 desilication product in, **sulfuric acid**
 conversion of, for 4A-type zeolite)

L48 ANSWER 8 OF 15 HCA COPYRIGHT 2003 ACS

115:11764 Filler for resin-containing potting compositions and
 manufacture. Mochizuki, Tadashi; Iwata, Hideo (Nippon Kokan K. K.,
 Japan). Jpn. Kokai Tokkyo Koho JP 03050113 A2 19910304 Heisei, 7
 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-185763
 19890718.

AB The filler is amorphous synthetic **silica** (without
 pptn. of crystals) having coeff. of moisture absorption <0.1
 wt.%, and contg. impurities U and Th <0.1 ppb (wt.) resp., and Fe,
 Al, Ti, Na and K <1 ppm (wt.) resp. The filler is manufd. by
 reacting alkali metal silicate (e.g., Na- or K-silicate) .ltoreq.5
 (as SiO₂) and mineral acid (e.g., H₂SO₄) .gtoreq.15 wt.% to form
 synthetic silica (wet process), and sintering under following
 conditions: T .gtoreq. 1200 (1) T + 5t .gtoreq. 1350 (2) 12 T + 5t
 .ltoreq. 15900 (3) t .ltoreq. 180 (4) where T(.degree.C) is
 sintering temp., and t(min) is sintering time. The filler is used
 in potting compns. for integrated circuits, etc.

IT 1344-09-8, **Sodium silicate**
 (amorphous silica manuf. from mineral acid and, as filler, for
 resin-contg. potting compns.)

RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

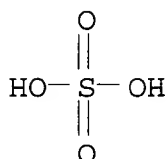
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7664-93-9, **Sulfuric acid**, uses and
 miscellaneous

(amorphous silica manuf. from **sodium silicate**
 and, as filler, for resin-contg. potting compns.)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 7732-18-5
 (hygroscopicity, of amorphous silica, in resin-contg. potting
 compns.)

RN 7732-18-5 HCA

CN Water (8CI, 9CI) (CA INDEX NAME)

H₂O

IT 7429-90-5, Aluminum, uses and miscellaneous
(impurity, in filler, for resin-contg. potting compns.)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC ICM C01B033-18
ICS C08K003-36; C08L063-00
CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76
IT 1312-76-1, Potassium silicate 1344-09-8, Sodium
silicate
(amorphous silica manuf. from mineral acid and, as filler, for
resin-contg. potting compns.)
IT 7664-93-9, **Sulfuric acid**, uses and
miscellaneous 7697-37-2, Nitric acid, uses and miscellaneous
(amorphous silica manuf. from **sodium silicate**
and, as filler, for resin-contg. potting compns.)
IT 7732-18-5
(hygroscopicity, of amorphous silica, in resin-contg. potting
compns.)
IT 7429-90-5, Aluminum, uses and miscellaneous 7439-89-6,
Iron, uses and miscellaneous 7440-23-5, Sodium, uses and
miscellaneous 7440-29-1, Thorium, uses and miscellaneous
7440-32-6, Titanium, uses and miscellaneous 7440-61-1, Uranium,
uses and miscellaneous
(impurity, in filler, for resin-contg. potting compns.)

L48 ANSWER 9 OF 15 HCA COPYRIGHT 2003 ACS
112:182381 Manufacture of high-purity silica. Seki, Akira; Narita,
Yuuki; Nagata, Shunro (Kawatetsu Mining Co., Ltd., Japan). Ger.
Offen. DE 3830777 A1 19900315, 5 pp. (German). CODEN: GWXXBX.
APPLICATION: DE 1988-3830777 19880909.

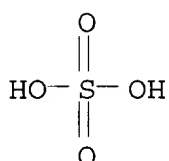
AB The SiO₂, having total impurity content .ltoreq.5 ppm, is manufd. by
adding an **aq.** alkali metal silicate soln. whose viscosity
has been adjusted to 10-10,000 P, directly to a mineral acid soln.
to dissolve the impurities and to form a **SiO₂ ppt**
. that is washed with mineral acid. The high-purity SiO₂ is esp.
useful for optical and electronic applications. **Water**
glass (3330 g; SiO₂ 29.5, Na₂O 9.8 wt.%) was concd. to 32 wt.% SiO₂
and viscosity .apprx.100 P at 32.degree., and added to 10 L 21.7
wt.% HNO₃ contg. 50 g 35 wt.% H₂O₂ to give SiO₂ that was washed with
pure **water**, reslurried in an **aq.** HNO₃-H₂O₂-EDTA
soln., filtered, dried, and sintered at 1100.degree. for 2 h to give
SiO₂ contg. Al 1.1, Fe 0.2, Ti 0.5, and K, Ca, Mg, U, and Th
.ltoreq.0.1 (each), and Na .ltoreq.1.0 ppm, vs. 1100, 130, 160, 100,
100, 100, 102, and 220 ppm, resp. for the **water** glass.

IT 7429-90-5, Aluminum, uses and miscellaneous
(impurities, dissoln. of, in mineral acid-hydrogen peroxide, in
silica pptn. from alkali metal silicate solns.,

for high-purity silica)
 RN 7429-90-5 HCA
 CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT 7664-93-9, Sulfuric acid, reactions
 (pptn. with, of silica, from alkali metal
 silicate solns., in high-purity silica prepn.)
 RN 7664-93-9 HCA
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 1344-09-8, Water glass
 (reaction of, with mineral acid-hydrogen peroxide solns., for
 impurity dissoln. and high-purity silica, viscosity control in)

RN 1344-09-8 HCA
 CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C01B033-18
 CC 49-3 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 57

ST water glass mineral acid silica; impurity removal
 silica pptn; nitric acid water glass
 silica; sulfuric acid water glass
 silica; hydrogen peroxide acid silica

IT Acids, reactions
 (inorg., pptn. with, of silica, from alkali
 metal silicate solns., in high-purity silica prepn.)

IT 7429-90-5, Aluminum, uses and miscellaneous 7439-89-6,
 Iron, uses and miscellaneous 7439-95-4, Magnesium, uses and
 miscellaneous 7440-09-7, Potassium, uses and miscellaneous
 7440-29-1, Thorium, uses and miscellaneous 7440-32-6, Titanium,
 uses and miscellaneous 7440-61-1, Uranium, uses and miscellaneous
 7440-70-2, Calcium, uses and miscellaneous
 (impurities, dissoln. of, in mineral acid-hydrogen peroxide, in
 silica pptn. from alkali metal silicate solns.,
 for high-purity silica)

IT 60-00-4P, EDTA, uses and miscellaneous
 (mineral acids contg. hydrogen peroxide and, pptd.
 silica washing with, in high-purity silica prepn. from
 alkali metal silicate solns.)

IT 7664-93-9, Sulfuric acid, reactions
 7697-37-2, Nitric acid, reactions
 (pptn. with, of silica, from alkali metal

silicate solns., in high-purity silica prepn.)
 IT 7631-86-9P, Silica, preparation
 (prepn. of high-purity, from aq. alkali metal silicate
 solns., by pptn. with mineral acid)
 IT 1344-09-8, Water glass
 (reaction of, with mineral acid-hydrogen peroxide solns., for
 impurity dissoln. and high-purity silica, viscosity control in)

L48 ANSWER 10 OF 15 HCA COPYRIGHT 2003 ACS

112:87470 Applications of a high spatial resolution combined AES/SIMS
 instrument. Bishop, H. E.; Moon, D. P.; Marriott, P.; Chalker, P.
 R. (Mater. Dev. Div., Harwell Lab., Oxon, OX11 0RA, UK). Vacuum,
 39(10), 929-39 (English) 1989. CODEN: VACUAV. ISSN: 0042-207X.

AB An Auger microprobe (MA 500, VG Scientific Ltd) was fitted with a 30
 keV field-emission gallium ion gun and quadrupole mass spectrometer.
 The resulting instrument has a secondary electron imaging capability
 of 50 nm for both primary electron and ion beams. A wide range of
 materials problems was studied demonstrating the value of 2
 complementary high spatial resoln. techniques available on the same
 instrument. Examples are given of its use in the fields of
 corrosion, fracture of composite materials, microelectronics and
 biol. science.

IT 7429-90-5, Aluminum, properties
 (Auger-secondary ion mass spectral combined studies of)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT 7631-86-9, Silicon dioxide, properties
 (Auger-secondary ion mass spectral combined studies of composite
 materials contg.)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT 12003-81-5

(Auger-secondary ion mass spectral studies of)

RN 12003-81-5 HCA

CN Aluminum, compd. with nickel (1:3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ni	3	7440-02-0
Al	1	7429-90-5

IT 1344-28-1, Aluminum oxide, properties

(Auger-secondary ion mass spectral study of ppts. of,

in nickel matrixes)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 73-8 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 7440-42-8, Boron, properties
(Auger-secondary ion mass spectra studies of nickel **aluminum doped** with)

IT 57-12-5, Cyanide, properties **7429-90-5**, Aluminum, properties 7440-32-6, Titanium, properties 7440-55-3, Gallium, properties 14067-07-3, Silicon(1+), properties 14594-80-0, Boron(1+), properties 15721-70-7, Uranium(1+), properties 17341-25-2, Sodium(1+), properties
(Auger-secondary ion mass spectral combined studies of)

IT 409-21-2, Silicon carbide, properties 7440-21-3, Silicon, properties 7440-23-5, Sodium, properties **7631-86-9**, **Silicon dioxide**, properties
(Auger-secondary ion mass spectral combined studies of composite materials contg.)

IT 1306-38-3, Cerium dioxide, properties 1313-99-1, Nickel monoxide, properties 7440-02-0, Nickel, properties 7440-45-1, Cerium, properties **12003-81-5** 12597-68-1, Stainless steel, properties 125239-92-1, Nickel monoxide-180
(Auger-secondary ion mass spectral studies of)

IT 7440-48-4, Cobalt, properties
(Auger-secondary ion mass spectral studies of, in oxide scales formed in **water** loops)

IT **1344-28-1, Aluminum oxide**, properties
(Auger-secondary ion mass spectral study of **ppts.** of, in nickel matrixes)

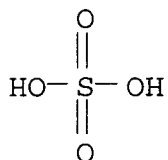
L48 ANSWER 11 OF 15 HCA COPYRIGHT 2003 ACS

107:61505 Manufacture of hydrophobic silica fines. Takei, Hiroharu; Oyama, Toshikazu; Fukatsu, Yasuo; Maeno, Masahiro (Mitsubishi Mining and Cement Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62108727 A2 19870520 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-249844 19851107.

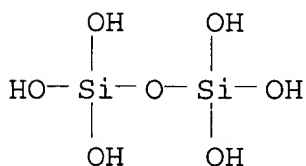
AB Silicate raw material is acid-treated to **ppt. SiO₂** hydrogel, then treated with silane coupling agent, cured at high temp. and high pressure, and quenched to give hydrophobic SiO₂ fines which are useful as sedimentation-preventing agents in paint ink or natural rubber. Thus, **Na silicate** contg. 15% SiO₂ ws mixed with 25% H₂SO₄ at wt. ratio 1:0.67, then cleaned with **H₂O** to form SiO₂ hydrogel, and mixed with an **aq.** soln. of methoxysilane coupling agent. The resulting soln. was kept for 1 night, filtered, the gel was heated at 230.degree. for 1 h in an autoclave before the steam was released, and quenched to yield hydrophobic SiO₂ fines.

IT **7664-93-9, Sulfuric acid**, reactions
(reaction of, with **sodium silicate**, for forming silica hydrogel for prepn. of hydrophobic silica fines)

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 12068-50-7, Halloysite
(reaction of, with **sulfuric acid** in manuf. of
hydrophobic silica fines)
RN 12068-50-7 HCA
CN Halloysite (Al₂(Si₂O₇).2H₂O) (9CI) (CA INDEX NAME)



2 Al

2 H₂O

IT 1344-09-8, **Sodium silicate**
(reaction of, with **sulfuric acid**, for forming
silica hydrogel for prepn. of hydrophobic silica fines)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C01B033-157
CC 49-3 (Industrial Inorganic Chemicals)
ST **sodium silicate** silica fines prepn
IT Clays, reactions
(reaction of, with **sulfuric acid** in manuf. of
hydrophobic silica fines)
IT 7664-93-9, **Sulfuric acid**, reactions
(reaction of, with **sodium silicate**, for
forming silica hydrogel for prepn. of hydrophobic silica fines)
IT 12068-50-7, Halloysite
(reaction of, with **sulfuric acid** in manuf. of
hydrophobic silica fines)
IT 1344-09-8, **Sodium silicate**

(reaction of, with **sulfuric acid**, for forming
silica hydrogel for prepn. of hydrophobic silica fines)

L48 ANSWER 12 OF 15 HCA COPYRIGHT 2003 ACS

97:201750 Manufacturing of ~~magnetic powder~~. (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57116707 A2 19820720 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-2313 19810110.

AB Magnetic powder is manufd. by coating powd. Fe compds. (goethite, Fe₂O₃, Fe₃O₄, etc.) with an Al compd. and a Si compd., heating at 200-500.degree., dewatering (e.g., pressurized filtration), and reducing in H. Thus, a strongly alk. soln. contg. a dispersion of goethite particles was mixed with **aq.** Al₂(SO₄)₃, and sparged with CO₂ to adjust pH .ltoreq.10, to **ppt.** hydrated **Al₂O₃** on the particles. These particles were cleaned, and heated at 300.degree. to convert the hydrated **Al₂O₃** to **Al₂O₃**. A similar process was applied to coat with **SiO₂**. The coated particles were sepd. from an **aq.** medium by pressurized filtration, and then were reduced in H at 500.degree. to a powd. product with good magnetic properties.

IT 7429-90-5, uses and miscellaneous
(**doping** with silicon and, in magnetic powder manuf.)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC B22F009-20

ICA H01F001-06

CC 55-4 (Ferrous Metals and Alloys)
Section cross-reference(s): 77

ST magnetic iron powder manuf goethite; **aluminum**
doping magnetic powder manuf; silicon **doping**
magnetic powder manuf

IT 7439-89-6P, preparation
(**aluminum-silicon doped** magnetic powder,
manuf. of, from goethite)

IT 7440-21-3, uses and miscellaneous
(**doping** with **aluminum** and, in magnetic powder
manuf.)

IT 7429-90-5, uses and miscellaneous
(**doping** with silicon and, in magnetic powder manuf.)

IT 1309-37-1, uses and miscellaneous 1309-38-2, uses and
miscellaneous 1310-14-1
(iron powder from, **aluminum-silicon doped**
magnetic, manuf. of)

L48 ANSWER 13 OF 15 HCA COPYRIGHT 2003 ACS

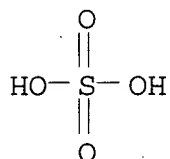
86:74535 Coating compositions containing **precipitated**
silica. Wason, Satish K. (Huber, J. M., Corp., USA). U.S.
US 3993497 19761123, 5 pp. (English). CODEN: USXXAM. APPLICATION:
US 1975-549637 19750213.

AB **Na silicate** (I) solns. were treated with controlled addn. of H₂SO₄ and Al sulfate (II) solns. to **ppt** . **SiO₂** having high **H₂O** holding ability, oil absorption and surface area useful as flatting agents for paints. Thus, a mixt. of 100 parts 11.7% H₂SO₄ and 7 parts II (1.4 lb./gal.) was added to 10 gal. I at 165.degree.F and at a rate of 300 mL/min to give SiO₂ with 88% moisture, 240 cm³/100 g oil absorption and 250 m²/g surface area. Applying nitrocellulose lacquer contg. 10% SiO₂ on glass gave a specimen with 8 (60%) gloss and 28 (85%) sheen.

IT **7664-93-9**, uses and miscellaneous
(aluminum sulfate contg., **pptn.** with, of **silica** from **sodium silicate**)

RN 7664-93-9 HCA

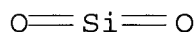
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7631-86-9**, uses and miscellaneous
(**pptd.**, as flatting agents for paints)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**
(**silica pptn.** from, with **sulfuric acid** contg., aluminum sulfate)

RN 1344-09-8 HCA

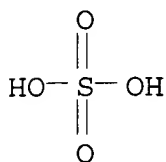
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **10043-01-3**
(**sulfuric acid** contg., **pptn.** with, of **silica** from **sodium silicate**)

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



● 2/3 Al

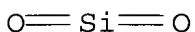
IC C09C001-30
 NCL 106288000B
 CC 42-5 (Coatings, Inks, and Related Products)
 ST **pptd silica** flatting agent; **sulfuric acid** sulica pptn; aluminum sulfate **silica pptn**; coating compn **pptd silica**
 IT Coating materials
 (nitrocellulose contg., **pptd. silica** on glass)
 IT **7664-93-9**, uses and miscellaneous
 (aluminum sulfate contg., **pptn.** with, of **silica** from **sodium silicate**)
 IT **7631-86-9**, uses and miscellaneous
 (**pptd.**, as flatting agents for paints)
 IT **1344-09-8**
 (**silica pptn.** from, with **sulfuric acid** contg., aluminum sulfate)
 IT **10043-01-3**
 (**sulfuric acid** contg., **pptn.** with, of **silica** from **sodium silicate**)

L48 ANSWER 14 OF 15 HCA COPYRIGHT 2003 ACS
 77:78853 Viscosity of fused **silica doped** with **alumina**. Whitworth, C. R.; Bunnell, L.; Brown, Sherman Daniel (Univ. Utah, Salt Lake City, UT, USA). Front. Glass Sci. Technol., Proc. Annu. Meet. Int. Comm. Glass, Meeting Date 1969, 87-92. Editor(s): Bateson, S. Int. Comm. Glass: Sheffield, Engl. (English) 1970. CODEN: 25JGAS.

AB Two com. natural fused **SiO2** and one synthetic **SiO2** were used in the study. These were **doped** with 0-5.22 wt. % **Al2O3** by **pptg.** Al quinolate onto a slurry of powd. quartz followed by melting at 1800-1900.degree. in vacuum for 30 min. Infrared measurements showed no **H2O** in the bulk glasses. The **Al2O3** content was detd. together with d. for each specimen. Fibers were pulled from the bulk glasses 10 in. long and 1 mm diam. X-ray, petrographic, and electron probe anal. showed no crystallinity and good distribution of **Al2O3**. Dynamic viscosity (.eta.) detns. were made by a traction technique at 1139, 1239, and 1340.degree. in air, H, and N atms. All samples behaved

similarly showing a peak in .eta. at .apprx.0.5 wt. % **Al2O3**
 . H was found to lower .eta. relative to N but .eta. was
 unexpectedly low for samples in air being below the results for H.
 Initially .eta. rises on **Al2O3** addn. because impurities in
 the **SiO2** act to make some of the O nonbridging and the
 addn. of **Al3+** increases the amount of bridging. The **Al3+** replaces
Si4+ in tetrahedral sites and the impurities act to compensate the
 resultant neg. charge. When the amt. of **Al3+** exceeds that for which
 impurities can compensate, further **Al3+** introduces O vacancies which
 bring about a decrease in .eta..

IT 7631-86-9, vitreous
 (viscosity of **aluminum oxide-doped**)
 RN 7631-86-9 HCA
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, properties
 (viscosity of fused **silica doped** with)
 RN 1344-28-1 HCA
 CN Aluminum oxide (**Al2O3**) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 CC 57-1 (Ceramics)
 Section cross-reference(s): 65
 ST. **silica** glass **alumina doped**; viscosity
 glass **alumina**
 IT Glass fibers
 (aluminum oxide-doped
 silica)
 IT 7631-86-9, vitreous
 (viscosity of **aluminum oxide-doped**)
 IT 1344-28-1, properties
 (viscosity of fused **silica doped** with)

L48 ANSWER 15 OF 15 HCA COPYRIGHT 2003 ACS
 63:76515 Original Reference No. 63:14093e-f Adsorption characteristics
 of rutile samples modified with aluminum, silicon, and zinc oxides.
 Isirikyan, A. A.; Ushakova, E. V. (State Univ., Moscow).
 Lakokrasochnye Materialy i Ikh Primenenie (3), 18-21 (Russian) 1965.
 CODEN: LAMAAD. ISSN: 0130-9013.
 AB cf. CA 61, 3720c. Rutile prep'd. from the ilmenite concentrates of
 the different areas was modified with **Al2O3**, **SiO2**
 , and **ZnO** by the 2 following methods: (a) an aq.
 suspension of **TiO2** was treated with Na aluminate, then the
 water-glass soln. was added; subsequently the suspension was
 satd. with **CO2**. On the surface of **TiO2** the aluminosilicate
 ppt. contained 2% **Al2O3** and 0.8% **SiO2**
 (based on the wt. of the pigment); (b) the mixt. of the oxides was
 pptd. with **Na2CO3** soln. to pH = 4 and further with **NaOH** to
 pH = 7 from the mixt. of Al and Zn sulfates and water
 glass to give a coating of the oxides on the surface of pigment

contg. **Al₂O₃** 2, **SiO₂** 0.8, and ZnO 0.3%. The adsorption isotherms of N, Ar, C₆H₆, cyclohexene, and MeOH vapors on initial and modified samples of TiO₂, and on a control aluminosilicate sample were measured. The **doping** of TiO₂ with **Al₂O₃** and **SiO₂** (2-3%) changes the surface chemistry of TiO₂ substantially. The surface of rutile modified in the above-mentioned manner behaves as the aluminosilicate.

IT 1344-28-1, **Aluminum oxide**
7631-86-9, **Silica**
(rutile and TiO₂ contg., adsorption by)
RN 1344-28-1 HCA
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 4 (Surface Chemistry and Colloids)
IT Adsorption
(by rutile and TiO₂, contg. **Al₂O₃**, **SiO₂** or ZnO)
IT 1317-80-2, Rutile 13463-67-7, Titanium oxide, TiO₂
(adsorption by, contg. **Al₂O₃**, **SiO₂** or ZnO)
IT 110-83-8, Cyclohexene
(adsorption of, by rutile or TiO₂ contg. **Al₂O₃**, **SiO₂** or ZnO)
IT 67-56-1, Methanol 71-43-2, Benzene, 7440-37-1, Argon 7727-37-9, Nitrogen
(adsorption of, by rutile or TiO₂, contg. **Al₂O₃**, **SiO₂** or ZnO)
IT 1314-13-2, Zinc oxide 1344-28-1, **Aluminum oxide** 7631-86-9, **Silica**
(rutile and TiO₂ contg., adsorption by)

=> d 149 1-16 ti

L49 ANSWER 1 OF 16 HCA COPYRIGHT 2003 ACS
TI Role of liquid phase in PTCR characteristics of (Ba_{0.7}Sr_{0.3})TiO₃ ceramics

L49 ANSWER 2 OF 16 HCA COPYRIGHT 2003 ACS
TI Cation segregation in an oxide ceramic with low solubility: yttrium **doped .alpha.-alumina**

L49 ANSWER 3 OF 16 HCA COPYRIGHT 2003 ACS
TI **Dopants** for synthesis of stable bimodally porous titania

L49 ANSWER 4 OF 16 HCA COPYRIGHT 2003 ACS
TI Densification and microstructure of refractory periclase grains

- L49 ANSWER 5 OF 16 HCA COPYRIGHT 2003 ACS
 TI Grain-growth inhibition in Na₂O-**doped** TiO₂-excess barium titanate ceramic
- L49 ANSWER 6 OF 16 HCA COPYRIGHT 2003 ACS
 TI New UO₂ fuel studies
- L49 ANSWER 7 OF 16 HCA COPYRIGHT 2003 ACS
 TI Effective catalysts for direct cracking of methane to produce hydrogen and filamentous carbon. Part I. Nickel catalysts
- L49 ANSWER 8 OF 16 HCA COPYRIGHT 2003 ACS
 TI Silver aggregates in photoluminescent phosphate glasses of the 'Ag₂O-ZnO-P₂O₅' system
- L49 ANSWER 9 OF 16 HCA COPYRIGHT 2003 ACS
 TI Densification and microstructure of refractory periclase grains
- L49 ANSWER 10 OF 16 HCA COPYRIGHT 2003 ACS
 TI Crystallization of a glassy phase from high-**alumina** ceramics with CuO and B₂O₃ additives
- L49 ANSWER 11 OF 16 HCA COPYRIGHT 2003 ACS
 TI Manufacture of compositions based on mixed oxides of cerium and zirconium, the compositions obtained and their use in the manufacture of catalysts and catalyst supports, and the monolithic catalysts obtained and their use
- L49 ANSWER 12 OF 16 HCA COPYRIGHT 2003 ACS
 TI Devitrification inhibitor in binary borosilicate glass composite
- L49 ANSWER 13 OF 16 HCA COPYRIGHT 2003 ACS
 TI Method for adding oxide additives to **silica** soot
- L49 ANSWER 14 OF 16 HCA COPYRIGHT 2003 ACS
 TI Formation of crystalline fine particles from amorphous solid phase and its application
- L49 ANSWER 15 OF 16 HCA COPYRIGHT 2003 ACS
 TI Electrical activity of aluminum implanted in silicon: an interface problem in high-power devices
- L49 ANSWER 16 OF 16 HCA COPYRIGHT 2003 ACS
 TI Producing **doped** tungsten powders by chemical deposition

=> d l49 13,14,15 cbib abs hitstr hitind

- L49 ANSWER 13 OF 16 HCA COPYRIGHT 2003 ACS
 115:97837 Method for adding oxide additives to **silica** soot.
 Kogo, Takashi; Ishiguro, Yoichi; Oga, Yuichi (Sumitomo Electric

Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03050129 A2 19910304 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-182615 19890717.

AB The method comprises dipping a soot of **SiO₂** or mixt. contg. **SiO₂** and other oxide(s) into a soln. contg. solvent and an oxide additive (e.g., **Al₂O₃**) or a compd. (e.g., **AlCl₃**), which is converted to oxide additive as solute, changing temp. until surpassing satd. concn. of the solute for **pptg** . part or most of the solute and adhering the solute on the external surface and in the internal pores of the soot.

IT **1344-28-1, Aluminum oxide (Al₂O₃)** , uses and miscellaneous (additive, adding of, to **silica** soot, in manuf. of **aluminum-doped** glass)

RN 1344-28-1 HCA

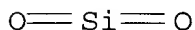
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7631-86-9, Silica**, uses and miscellaneous (soot, adding oxide additives to, in manuf. of **doped** glass)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C03B020-00

CC 57-1 (Ceramics)

ST oxide additive addn **silica** soot

IT **1344-28-1, Aluminum oxide (Al₂O₃)** , uses and miscellaneous (additive, adding of, to **silica** soot, in manuf. of **aluminum-doped** glass)

IT 7446-70-0, Aluminum chloride (AlCl₃), uses and miscellaneous (additive, adding of, to **silica**, in manuf. of **aluminum-doped** glass)

IT **7631-86-9, Silica**, uses and miscellaneous (soot, adding oxide additives to, in manuf. of **doped** glass)

L49 ANSWER 14 OF 16 HCA COPYRIGHT 2003 ACS

113:176669 Formation of crystalline fine particles from amorphous solid phase and its application. Kokubo, Tadashi (Inst. Chem. Res., Kyoto Univ., Uji, 611, Japan). Funsai (34), 117-22 (Japanese) 1990. CODEN: FUNSAA. ISSN: 0429-9051.

AB A review, with 9 refs., of the principle, theory, and characteristics of formation of cryst. fine particles from amorphous solid materials and its' applications. Prepn. of red glass colored with colloidal Au, photosensitive glass of Ce³⁺ and Au+ **doped** Li₂O-SiO₂ system, photochromic glass of AgCl **doped** Na₂O-Al₂O₃-B₂O₃-SiO₂ system, heat-resisting glass ceramics of TiO₂- and ZrO₂-**doped**

Li₂O-Al₂O₃-SiO₂ system, glass ceramics for dental, artificial bone, and structural use, e.g., MgO-CaO-TiO₂-SiO₂-P₂O₅, CaO-Al₂O₃-SiO₂ systems, etc., and Ba ferrite are presented.

CC 57-0 (Ceramics)
 ST review glass ceramic coloring; oxide glass coloring review; cryst.
 particle **pptn** glass review
 IT Glass ceramics
 Glass, oxide
 (coloring of, by cryst. particle **pptn**)
 IT Coloring
 (of oxide glass and glass ceramics by cryst. particle **pptn**.)

L49 ANSWER 15 OF 16 HCA COPYRIGHT 2003 ACS

113:163384 Electrical activity of aluminum implanted in silicon: an interface problem in high-power devices. Bruesch, P.; Halder, E.; Kluge, P.; Rhyner, J.; Roggwiller, P.; Stockmeier, T.; Stucki, F.; Wiesmann, H. J. (ABB Corp. Res., Baden, CH-5405, Switz.). Journal of Applied Physics, 68(5), 2226-34 (English) 1990. CODEN: JAPIAU. ISSN: 0021-8979.

AB States of aluminum implanted into silicon before and after annealing were studied by spreading resistance, secondary-ion mass spectroscopy, transmission electron microscopy, and energy-dispersive x-ray techniques. The case study presented here [Czochralski grown (100) Si, implanted dose 3 .times. 10¹⁵ cm⁻², junction depth 6 .mu.m] reveals that the major source for the loss of the elec. activity is out-diffusion, i.e., segregation into the native Si oxide layer and/or evapn. into the vacuum. In addn., the activity is reduced by the formation of Al oxide **ppts**. The results are discussed in the light of optical studies on the same materials performed previously as well as on the basis of a diffusion model which allows for out-diffusion. The large rate const. for out-diffusion indicates that the native oxide layer represents a highly reactive surface for Al. From the diffusion model it is possible to calc. an approx. elec. activity $\tilde{A}(x_j)$ as a function of junction depth x_j , which qual. reproduces well the obsd. activity $A(x_j)$. This demonstrates that the case study is representative for a large no. of samples which were implanted and annealed under widely different conditions. Some tech. processes which could possibly enhance the elec. activity are discussed.

IT 1344-28-1P, Aluminum sesquioxide, preparation
 (formation of, during aluminum implantation in silicon, elec. activity in relation to)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 76-1 (Electric Phenomena)

IT 7723-14-0, Phosphorus, properties
 (elec. activity of aluminum implanted in silicon doped with)

IT 1344-28-1P, Aluminum sesquioxide, preparation 11126-22-0P,
Silicon oxide
 (formation of, during aluminum implantation in silicon, elec.
 activity in relation to)

=> d his 150-

FILE 'HCA' ENTERED AT 10:31:23 ON 18 JUN 2003
 L50 3415 S (ALUMINUM# OR AL) (3A) IMPLANT?
 L51 924 S L8 (3A) IMPLANT?
 L52 356 S (L50 OR L51) AND L7
 L53 15 S L52 AND L32
 L54 14 S L53 NOT (L47 OR L48)
 L55 5 S L54 AND L9
 L56 9 S L54 NOT L55

=> d 155 1-5 cbib abs hitstr hitind

L55 ANSWER 1 OF 5 HCA COPYRIGHT 2003 ACS
 132:159398 Aluminum redistribution into **SiO₂/Si** system during
 oxidation of high dose **Al-implanted** silicon.
 Iacona, Fabio; Raineri, Vito; La Via, Francesco; Gasparotto, Andrea;
 Cali, Denise; Rimini, Emanuele (CNR-IMETEM, Catania, 95121, Italy).
 Ion Implantation Technology--98, International Conference on Ion
 Implantation Technology Proceedings, 12th, Kyoto, June 22-26, 1998,
 Meeting Date 1998, Volume 1, 134-137. Editor(s): Matsuo, Jiro;
 Takaoka, G.; Yamada, Isao. Institute of Electrical and Electronics
 Engineers: New York, N. Y. (English) 1999. CODEN: 68NKAN.

AB The distribution during wet oxidn. at 920.degree. of **Al**
implanted in Si at 35 keV and 3 .times. 1015/cm2 fluence has
 been investigated. About 40% of the fluence is lost just after the
 first stage of the thermal process; another 40-50% is distributed
 inside the growing oxide at a concn. of about 1020/cm3. A relevant
 fraction of the remaining Al atoms segregates inside highly
 defective zones. In addn., small **ppts.** were detected by
 TEM in the oxide layer. The inclusion of these **ppts.** in
 the **SiO₂** layer is the reason for the formation of very
 rough oxide surfaces.

IT 7631-86-9, **Silica**, uses
 (aluminum redistribution into **SiO₂/Si** system during
 oxidn. of high dose **Al-implanted** silicon)

RN 7631-86-9 HCA
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 76-2 (Electric Phenomena)
 ST aluminum redistribution **silica** silicon system oxidn
 IT Oxidation

- (aluminum redistribution into **SiO₂/Si** system during oxidn. of high dose **Al-implanted** silicon)
- IT 7440-21-3, Silicon, uses **7631-86-9, Silica**, uses (aluminum redistribution into **SiO₂/Si** system during oxidn. of high dose **Al-implanted** silicon)
- IT 7429-90-5, Aluminum, processes (aluminum redistribution into **SiO₂/Si** system during oxidn. of high dose **Al-implanted** silicon)

L55 ANSWER 2 OF 5 HCA COPYRIGHT 2003 ACS

124:64045 Effects of implantation temperature on the structure, composition and oxidation resistance of SiC. Yang, Zunde; Du, Honghua; Libera, Matthew; Singer, Irwin L. (Dep. Materials Science Eng., Stevens Inst. Technology, Hoboken, NJ, 07030, USA). Materials Research Society Symposium Proceedings, 354(Beam-Solid Interactions for Materials Synthesis and Characterization), 281-6 (English) 1995. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

AB .alpha.-SiC crystals were **implanted** with **aluminum** to a high dose at room temp. or 800.degree.C. Studies by transmission electron microscopy showed that SiC was amorphized by room temp. implantation but remained cryst. at 800.degree.C. Cryst. aluminum carbide was formed and aluminum redistribution took place in SiC implanted at 800.degree.C. Implanted and unimplanted crystals were oxidized in 1 atm flowing oxygen at 1300.degree.C. Amorphization led to accelerated oxidn. of SiC. The oxidn. resistance of SiC implanted at 800.degree.C was comparable to that of pure SiC. The oxidn. layers formed on SiC implanted at both temps. consisted of **silica** embedded with mullite **ppts**. The phase formation during implantation and oxidn. is consistent with thermodyn. predictions.

CC 57-2 (Ceramics)

Section cross-reference(s): 56

ST **aluminum implantation** silicon carbide property; oxidn silicon carbide **aluminum implantation**

IT Oxidation

(effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

IT 1299-86-1, Aluminum carbideal4c3 1302-93-8, Mullite

(effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

IT 409-21-2, Silicon carbideSiC, processes

(effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

IT 7429-90-5, Aluminum, processes

(**implantation** ion; effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

L55 ANSWER 3 OF 5 HCA COPYRIGHT 2003 ACS

122:320567 Effects of implantation temperature on the structure, composition, and oxidation resistance of **aluminum-**

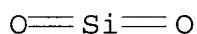
implanted SiC. Yang, Zunde; Du, Honghua; Libera, Matthew; Singer, Irwin L. (Dep. Materials Sci. Eng., Stevens Inst. Technol., Hoboken, NJ, 07030, USA). Journal of Materials Research, 10(6), 1441-7 (English) 1995. CODEN: JMREEE. ISSN: 0884-2914. Publisher: Materials Research Society.

AB .alpha.-SiC crystals were **implanted** with **aluminum** to a high dose at room temp. or 800.degree.C. Transmission electron microscopy showed that SiC was amorphized by room temp. implantation but remained cryst. after 800.degree.C implantation. Cryst. aluminum carbide was formed and aluminum redistribution took place in SiC implanted at 800.degree.C. Implanted and unimplanted crystals were oxidized in 1 atm flowing oxygen at 1300.degree.C. Amorphization led to accelerated oxidn. of SiC. The oxidn. resistance of SiC implanted at 800.degree.C was comparable with that of pure SiC. The oxidn. layers formed on SiC implanted at both temps. consisted of **silica** embedded with mullite **ppts.** The phase formation during implantation and oxidn. is consistent with thermodyn. predictions. The results from our current and earlier studies suggest that there exists an optimum range of implantation temp., probably above 500.degree.C but below 800.degree.C, which preserves the substrate crystallinity and retains the high aluminum dosage, for the enhancement of oxidn. resistance of SiC.

IT 7631-86-9, **Silica**, formation (nonpreparative)
(oxidn. product; effects of **aluminum**
implantation and **implantation** temp. on oxidn.
resistance of silicon carbide)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 57-2 (Ceramics)

ST **aluminum** implantation silicon carbide oxidn

IT Oxidation
(effects of **aluminum** implantation and
implantation temp. on oxidn. resistance of silicon
carbide)

IT 409-21-2, Silicon carbide, processes
(effects of **aluminum** implantation and
implantation temp. on oxidn. resistance of silicon
carbide)

IT 7429-90-5, **Aluminum**, processes
(**implantation** ion; effects of **aluminum**
implantation and **implantation** temp. on oxidn.
resistance of silicon carbide)

IT 1299-86-1, Aluminum carbide 1302-93-8, Mullite 7631-86-9
, **Silica**, formation (nonpreparative)
(oxidn. product; effects of **aluminum**
implantation and **implantation** temp. on oxidn.
resistance of silicon carbide)

L55 ANSWER 4 OF 5 HCA COPYRIGHT 2003 ACS

121:218777 Al-O interactions in ion-implanted crystalline silicon. Galvagno, G.; La Ferla, A.; Spinella, C.; Priolo, F.; Raineri, V.; Torrisi, Lucio; Rimini, E.; Carnera, A.; Gasparotto, A. (CORIMME, Catania, 95121, Italy). Journal of Applied Physics, 76(4), 2070-7 (English) 1994. CODEN: JAPIAU. ISSN: 0021-8979.

AB The formation and dissoln. of Si-O-Al **ppts.** have been investigated in Czochralski silicon wafers **implanted** with 6-MeV **Al** ions and thermally processed. The data have been compared to the O **pptn.** in samples implanted with 6-MeV Si or P ions. The amt. of **pptd.** O atoms is about one order of magnitude higher for Al than for the Si- or P-implanted samples. Moreover, a strong gettering of the Al atoms by the **silicon dioxide ppts.** has been obsd. The **ppt.** evolution has been studied for different annealing times and temps. The oxygen **pptn.** has been simulated by the classical theory of nucleation and growth, with the introduction of new factors that take into account the implant damage distribution, the agglomeration of point defects during the initial stages of the annealing, and the oxygen outdiffusion from the sample surface.

CC 76-3 (Electric Phenomena)

ST **aluminum** ion **implantation** silicon crystal

IT 7429-90-5, Aluminum, properties 7440-21-3, Silicon, properties 7782-44-7, Oxygen, properties
(Al-O interactions in **aluminum** ion **implanted** cryst. silicon)

L55 ANSWER 5 OF 5 HCA COPYRIGHT 2003 ACS

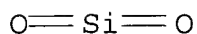
115:292269 Annealing behavior of ion-**implanted**, **aluminum** atoms in silicon by use of capping film. Watanabe, Masahide; Ishiwata, Osamu; Nagano, Megumi; Kirihata, Humiaki (Fuji Electr. Corp. Res. and Dev., Ltd., Matsumoto, 390, Japan). Journal of the Electrochemical Society, 138(11), 3427-31 (English) 1991. CODEN: JESOAN. ISSN: 0013-4651.

AB The elec. activity of **Al** atoms **implanted** into Si is investigated. The **ppts.** of Al atoms, which can be found at the Si surface, do not contribute to the elec. cond. But with high-temp. annealing, for example at 1250.degree., the **ppts.** of Al atoms disappear. The low elec. activity of Al atoms is connected with the existence of Al **ppts.**, which correspond to the oxygen **ppts.**, and the out-diffusion of Al atoms. In a newly developed annealing method with a capping film covering the implanted si surface, out-diffusion of **Al** atoms from the **implanted** region into the capping film and simultaneous back-diffusion into the si substrate is evident. Such a back-diffusion mechanism increases the concn. of the al atoms and the elec. activity.

IT 7631-86-9, Silicon dioxide, uses and miscellaneous

(annealing behavior of **implanted aluminum** and silicon coated with)

RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)
ST aluminum elec activity silicon annealing; diffusion ppt
aluminum oxygen silicon
IT **7631-86-9, Silicon dioxide**, uses and
miscellaneous
(annealing behavior of **implanted aluminum** and
silicon coated with)
IT 7440-21-3, Silicon, uses and miscellaneous
(annealing behavior of **implanted aluminum** in)
IT 12033-89-5, Silicon nitride, uses and miscellaneous
(annealing behavior of **implanted aluminum** in
silicon coated with)
IT 11126-22-0, **Silicon oxide**
(pptn. of, in silicon with **implanted**
aluminum, annealing behavior in relation to)

=> d l56 1-9 cbib abs hitstr hitind

L56 ANSWER 1 OF 9 HCA COPYRIGHT 2003 ACS
133:315033 Optical applications of ion beam irradiation. Pivin, J. C.;
Dimova-Malinovska, D.; Sendova-Vassileva, M.; Nikolaeva, M.;
Martucci, A. (CSNSM, IN2P3-CNRS, Orsay, 91405, Fr.). Vacuum,
58(2-3), 387-395 (English) 2000. CODEN: VACUAV. ISSN: 0042-207X.
Publisher: Elsevier Science Ltd..
AB Layers of various metals (M) buried in Si, **SiO2** or Al2O3
were irradiated with various fluences of heavy MeV ions in order to
obtain either silicides or nanometric particles that are expected to
exhibit interesting optical properties. The mixing of noble metals,
Fe and Er with these matrixes proceeds either via isotropic
diffusion in the metal layer or the growth of compd. particles by
planar diffusion or a dual mechanism involving recoil implantation
and radiation-enhanced diffusion of M atoms in the matrix. Noble
metals form clusters in the oxides directly by lateral segregation
and by repptn. after diffusing over some distance. Both types of
clusters contribute to the absorption resonance of the metal plasmon
in the visible part of the spectrum, so that the absorption
intensity is not a simple function of the mixing yield. Irradn. of
co-sputtered **SiO2:M** layers with a low ion fluence induces
more homogeneous pptn. and provides these layers with as
interesting optical properties as those obtained by mixing.
IT **7631-86-9, Silica**, properties
(optical applications of metal ion beam irradiated Si,
SiO2 and Al2O3)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



- CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
- ST optical property metal ion **implantation** silicon
silica alumina; iron erbium metal plasmon
sputtering diffusion segregation **pptn**
- IT Sputtering
(cosputtering; in prepn. of metal ion beam irradiated Si,
SiO2 and Al2O3)
- IT Metals, uses
(dopant; optical applications of metal ion beam irradiated Si,
SiO2 and Al2O3)
- IT Microstructure
Precipitation (chemical)
Segregation
(effect on optical applications of metal ion beam irradiated Si,
SiO2 and Al2O3)
- IT Silicides
(effects on optical applications of metal ion beam irradiated Si,
SiO2 and Al2O3)
- IT Plasmon
(in metal ion beam irradiated Si, **SiO2** and Al2O3)
- IT Random walk
(in optical applications of metal ion beam irradiated Si,
SiO2 and Al2O3)
- IT Controlled atmospheres
Diffusion
Magnetron sputtering
(in prepn. of metal ion beam irradiated Si, **SiO2** and
Al2O3)
- IT Ion implantation
(metal; in prepn. of metal ion beam irradiated Si, **SiO2**
and Al2O3)
- IT Nanoparticles
Optical properties
Optical transmission
(optical applications of metal ion beam irradiated Si,
SiO2 and Al2O3)
- IT Evaporation
(thermal; in prepn. of metal ion beam irradiated Si, **SiO2**
and Al2O3)
- IT Crystal vacancies
(traps; effect on optical applications of metal ion beam
irradiated Si, **SiO2** and Al2O3)
- IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses
(atm.; in prepn. of metal ion beam irradiated Si, **SiO2**
and Al2O3)
- IT 7439-89-6, Iron, uses 7440-05-3, Palladium, uses 7440-22-4,

- Silver, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses 7440-57-5, Gold, uses (dopant; in optical applications of metal ion beam irradiated Si, **SiO₂** and Al₂O₃)
- IT 7440-06-4, Platinum, uses (dopant; optical applications of metal ion beam irradiated Si, **SiO₂** and Al₂O₃)
- IT 12020-28-9P, Erbium silicide (ErSi₂) 12022-99-0P, Iron silicide (FeSi₂) (effects on optical applications of metal ion beam irradiated Si, **SiO₂** and Al₂O₃)
- IT 7440-05-3D, Palladium, ion, uses 7440-06-4D, Platinum, ion, uses 7440-22-4D, Silver, ion, uses 7440-50-8D, Copper, ion, uses 7440-57-5D, Gold, ion, uses (implantation; effects on optical applications Si, **SiO₂** and Al₂O₃)
- IT 18472-30-5, Erbium(3+), uses (implantation; optical applications of metal ion beam irradiated Si, **SiO₂** and Al₂O₃)
- IT 1344-28-1, Alumina, properties 7440-21-3, Silicon, properties 7631-86-9, **Silica**, properties (optical applications of metal ion beam irradiated Si, **SiO₂** and Al₂O₃)

L56 ANSWER 2 OF 9 HCA COPYRIGHT 2003 ACS

131:22159 Ion implantation-induced nanoscale particle formation in Al₂O₃ and **SiO₂** via reduction. Hunt, E. M.; Hampikian, J. M. (Columbian Chemical Company, Marietta, GA, USA). Acta Materialia, 47(5), 1497-1511 (English) 1999. CODEN: ACMAFD. ISSN: 1359-6454. Publisher: Elsevier Science Ltd..

AB A novel method for creating nano-dimensional metallic **ppts** in oxide materials using the technol. of ion implantation is reported. The redn. of single-cryst. Al₂O₃ to Al and fused **SiO₂** to Si is induced by ion implantation with ions which are selected in accordance with the laws of thermodyn. The Al and Si resulting from redn. subsequently cluster and react with other elements to form nano-dimensional **ppts**. The implantation of 150 keV Y⁺ and Ca⁺ into Al₂O₃ to a fluence of 5 .times. 10¹⁶ ions/cm², results in Al particles with an av. diam. of 12.5 and 8.0 nm, resp. **Al₂O₃ implanted** with Mg⁺ at the same ion energy and fluence forms MgAl₂O₄ platelets ranging from 5 to 10 nm in width and between 15 and 40 nm in length. The implantation of **SiO₂** with 160 keV Zr⁺ ions to a fluence of 10¹⁷ Zr⁺/cm², gave ZrSi₂ particles ranging in size between 1 and 17 nm. Consistent with thermodyn. predictions, control implants of Cr⁺ and Si⁺ in alumina and Cr⁺ in **SiO₂** do not gave particles that contain elements originally present in the substrate.

IT 1344-28-1, Alumina, processes 7631-86-9, **Silica**, processes (ion implantation-induced nanoscale particle formation via redn. in)

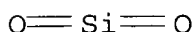
RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 57-2 (Ceramics)

Section cross-reference(s): 56

ST ion **implantation** induced nanoscale particle **alumina**; **silica** ion implantation induced nanoscale particle; **aluminum** nanoscale ion **implantation** induced **alumina**; silicon nanoscale ion implantation induced **silica**; yttrium ion **implantation** nanoscale particle **alumina**; calcium ion **implantation** nanoscale particle **alumina**; magnesium ion implantation nanoscale particle **silica**; zirconium ion implantation nanoscale particle **silica**; chromium ion implantation nanoscale particle **silica**

IT Ion implantation

(induced nanoscale particle formation in alumina and **silica** via redn.)

IT 1344-28-1, **Alumina**, processes 7631-86-9, **Silica**, processes

(ion **implantation**-induced nanoscale particle formation via redn. in)

IT 7429-90-5P, **Aluminum**, preparation

(ion **implantation**-induced nanoscale particle formation via redn. in alumina)

IT 14067-03-9, Chromium(1+), processes

(ion implantation-induced nanoscale particle formation via redn. in alumina and **silica**)

IT 14581-92-1, Magnesium(1+), processes 14701-19-0, Zirconium(1+), processes

(ion implantation-induced nanoscale particle formation via redn. in **silica**)

IT 7440-21-3P, Silicon, preparation

(ion implantation-induced nanoscale particle formation via redn. in **silica**)

IT 12039-90-6P, Zirconium silicide (ZrSi₂)

(zirconium ion implantation-induced nanoscale particle formation via redn. in **silica**)

L56 ANSWER 3 OF 9 HCA COPYRIGHT 2003 ACS

122:200013 CL characterization and depth distributions of waveguide

materials after 400 keV Eu implantations. Can, N.; Yang, B.; Hole,

D. E.; Townsend, P. D. (School of ~~Mathematical~~ and Physical

Sciences, University of Sussex, Brighton, BN1 9QH, UK). Nuclear

Instruments & Methods in Physics Research, Section B: Beam

Interactions with Materials and Atoms, 96(1,2), 397-400 (English)

1995. CODEN: NIMBEU. ISSN: 0168-583X. Publisher: Elsevier.

AB The characteristic emission lines from Eu implanted with 400 keV ions at a dose of 1 .times. 10¹⁶ atoms cm⁻² were studied by cathodoluminescence (CL) as a function of anneal temp. Thermal annealing was used to optically activate the Eu. Thermal annealing at 100-1000.degree. increases the CL intensity by a factor of 40 and 7 for Al₂O₃ and SiO₂, resp. At >1000.degree. the intensity decreases extremely rapidly as a result of Eu pptn . into nonradiative clusters. No satn. is obsd. for float-glass for annealing at .ltoreq.500.degree.. The projected range and range straggling for the as-**implanted Al₂O₃** and **SiO₂** samples were measured using the RBS method. The values extd. from the RBS are compared with those simulated by TRIM and SUSPRE computer algorithms. Exptl. results seem to be in agreement with TRIM and SUSPRE predictions. After annealing no noticeable diffusion of Eu for any samples was detected using the RBS. Results from subsequent excimer laser annealing are mentioned.

IT, **7631-86-9, Silica**, uses
(cathodoluminescence and depth distributions after europium implantation into waveguide)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST cathodoluminescence waveguide europium **implanted alumina silica**; luminescence cathodo waveguide europium alumina **silica**

IT 1344-28-1, Alumina, uses **7631-86-9, Silica**, uses
(cathodoluminescence and depth distributions after europium implantation into waveguide)

L56 ANSWER 4 OF 9 HCA COPYRIGHT 2003 ACS

119:171029 Diffusion and electrical behavior of **aluminum implanted** into capped silicon. Scandurra, A.; Galvagno, G.; Raineri, V.; Frisina, F.; Torrisi, A. (Consorzio Catania Ric., Catania, 95125, Italy). Journal of the Electrochemical Society, 140(7), 2057-62 (English) 1993. CODEN: JESOAN. ISSN: 0013-4651.

AB The diffusion and the elec. behavior of **Al implanted** in the dose range of 1 x 10¹³-5 x 10¹⁵ cm⁻² at 300 keV in capped and uncapped Si is studied. The Al-based **ppts** . which are formed when Al concn. exceeds its solid soly. in Si are elec. inactive. The out-diffusion phenomenon that is always presented in uncapped samples reduces the Al dose diffused into Si substrate. A study on the elec. activity of **Al implanted** in Si through SiO₂, Si₃N₄, and Si₃N₄/ SiO₂ capping films also is presented. In these capped samples Al segregation in SiO₂ layer occurs. The elec. active doses are small and comparable to that of uncapped samples. The authors studied the diffusivity of Al in bulk SiO₂ and

Si₃N₄ at 1200.degree.. The fast Al diffusion through SiO₂ thin layers is driven by a chem. reaction between Al and SiO₂ starting from the SiO₂/Si interface.

IT 7631-86-9, Silica, properties
(cap, diffusion and elec. activity of aluminum implanted silicon with)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 65, 66

ST diffusion activation aluminum implanted silicon

IT Electric current carriers
(concn. of, in aluminum implanted silicon)

IT Annealing
(diffusion and elec. behavior of aluminum implanted silicon after)

IT Electric activation
(of aluminum implanted in silicon)

IT Surface structure
(of aluminum implanted silicon, ppts . and dislocation loops in)

IT Interface
(silicon-silica, diffusion of aluminum through)

IT 7631-86-9, Silica, properties 12033-89-5,
Silicon nitride (Si₃N₄), properties
(cap, diffusion and elec. activity of aluminum implanted silicon with)

IT 7440-21-3, Silicon, properties
(diffusion and elec. activity of aluminum-implanted)

L56 ANSWER 5 OF 9 HCA COPYRIGHT 2003 ACS

113:163384 Electrical activity of aluminum implanted in silicon: an interface problem in high-power devices. Bruesch, P.; Halder, E.; Kluge, P.; Rhyner, J.; Roggwiler, P.; Stockmeier, T.; Stucki, F.; Wiesmann, H. J. (ABB Corp. Res., Baden, CH-5405, Switz.). Journal of Applied Physics, 68(5), 2226-34 (English) 1990. CODEN: JAPIAU. ISSN: 0021-8979.

AB States of aluminum implanted into silicon before and after annealing were studied by spreading resistance, secondary-ion mass spectroscopy, transmission electron microscopy, and energy-dispersive x-ray techniques. The case study presented here [Czochralski grown (100) Si, implanted dose 3 .times. 10¹⁵ cm⁻², junction depth 6 .mu.m] reveals that the major source for the loss of the elec. activity is out-diffusion, i.e., segregation into the native Si oxide layer and/or evapn. into the vacuum. In addn., the activity is reduced by the formation of Al oxide ppts. The results are discussed in the light of

optical studies on the same materials performed previously as well as on the basis of a diffusion model which allows for out-diffusion. The large rate const. for out-diffusion indicates that the native oxide layer represents a highly reactive surface for Al. From the diffusion model it is possible to calc. an approx. elec. activity $\sim A(x_j)$ as a function of junction depth x_j , which qual. reproduces well the obsd. activity $A(x_j)$. This demonstrates that the case study is representative for a large no. of samples which were implanted and annealed under widely different conditions. Some tech. processes which could possibly enhance the elec. activity are discussed.

- CC 76-1 (Electric Phenomena)
- ST activity **aluminum implanted** silicon interface;
segregation outdiffusion aluminum activity
- IT 7440-21-3, Silicon, properties
(elec. activity of **aluminum implanted** in)
- IT 7723-14-0, Phosphorus, properties
(elec. activity of **aluminum implanted** in
silicon doped with)
- IT 1344-28-1P, Aluminum sesquioxide, preparation 11126-22-0P,
Silicon oxide
(formation of, during **aluminum implantation**
in silicon, elec. activity in relation to)
- IT 7446-70-0, Aluminum trichloride, uses and miscellaneous
(source from, for **aluminum implantation** into
silicon)

L56 ANSWER 6 OF 9 HCA COPYRIGHT 2003 ACS

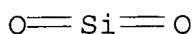
113:32727 Diffusion mechanism of ion-**implanted**
aluminum atoms in annealing with multilayered film.
Watanabe, Masahide; Ishiwata, Osamu; Nagano, Megumi; Kirihata,
Humiaki (Fuji Electr. Corp. Res. and Dev., Ltd., Matsumoto, 390,
Japan). Report of Research Center of Ion Beam Technology, Hosei
University, Supplement, 8, 79-84 (English) 1990. CODEN: RCISDS.
ISSN: 0286-0201.

AB The elec. activity for Al atoms **implanted** into
Si is investigated. The **ppts.** of Al atoms can be found at
the Si surface, which don't contribute to the elec. cond. But in
the high temp. annealing such as 1250.degree., the **ppts.**
of Al atoms disappear. The low elec. activity for Al atoms is
connected with the existence of Al **ppts.** and the
out-diffusion of Al atoms. In a newly developed annealing method
with a multilayered film covering the implanted Si surface, it can
be seen that out-diffusion of Al atoms occurs from the implanted
region to the multilayered film and simultaneously back-diffusion
occurs into the Si substrate. Such a back-diffusion mechanism
should increase the elec. activity for Al atoms
implanted.

- IT 7631-86-9, Silica, properties
(diffusion and elec. activity of **aluminum**
implant in silicon substrate coated by)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 65
- ST **aluminum implant** elec activity silicon
multilayer; diffusion **aluminum implant**
multilayer annealing
- IT Diffusion
(of **aluminum implant** in silicon in
multilayered films)
- IT **7631-86-9, Silica**, properties 109371-84-8,
Silicon nitride (SiO-1N0-1)
(diffusion and elec. activity of **aluminum**
implant in silicon substrate coated by)
- IT 7440-21-3, Silicon, properties
(elec. activity and diffusion of **aluminum**
implant in, coated by **silica** and silicon
nitride)

L56 ANSWER 7 OF 9 HCA COPYRIGHT 2003 ACS

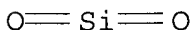
101:82631 Bipolar integrated circuits. (Toshiba Corp., Japan). Jpn.
Kokai Tokkyo Koho JP 59054222 A2 19840329 Showa, 5 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1982-163255 19820921.

AB Bipolar integrated circuits are fabricated with Si doping concns.
exceeding the soly. limit without **pptn.** by doping several
n+ regions on a p-Si substrate, epitaxially depositing n-Si,
depositing **SiO2** and **Si3N4**, depositing poly-Si,
implanting Si ions, **implanting** Al, and
annealing.

IT **7631-86-9**, uses and miscellaneous
(in bipolar integrated circuit fabrication)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



- IC H01L021-22; H01L021-265; H01L021-76
- CC 76-3 (Electric Phenomena)
- IT **7631-86-9**, uses and miscellaneous 12033-89-5, uses and
miscellaneous
(in bipolar integrated circuit fabrication)

L56 ANSWER 8 OF 9 HCA COPYRIGHT 2003 ACS

86:198073 Aggregation and migration of ion-**implanted** silver in
lithia-**alumina-silica** glass. Arnold, G. W.;
Borders, J. A. (Sandia Lab., Albuquerque, NM, USA). Journal of
Applied Physics, 48(4), 1488-96 (English) 1977. CODEN: JAPIAU.
ISSN: 0021-8979.

- AB The near-surface nucleation and crystn. behavior of Ag⁺ ion-
implanted Li₂O-Al₂O₃-SiO₂ glasses was
studied. For room-temp. Ag implants, crystn. of the glass ceramic
phase was prevented by dissoln. of Ag **ppts.** and migration
of Ag atoms at temps. below that necessary for formation of the
glass ceramic phase. Crystn. was demonstrated after low-temp. or
low-dose-rate implantations. Optical spectroscopy was used to
monitor the size of colloidal Ag particles and to detect the
presence of the cryst. phase. Rutherford backscattering
spectroscopy (RBS) was used to obtain the depth distribution of Ag
atoms in the glass and thus monitor Ag migration. For samples
implanted at room temp. and at relatively high dose rates (.apprx.1
.mu.A/cm²), aggregation of the Ag atoms into colloids occurred
during implantation and also during subsequent annealing to temps.
.ltoreq.350.degree.C. The RBS spectra indicate some migration of
the Ag to the surface at these temps. For annealing temps.
>350.degree.C, both optical and RBS measurements show that Ag is
lost from the glass surface. The initial spatial distribution of
the Ag for these high-dose-rate room-temp. implantations was
distorted by interactions with the assocd. damage and possibly by
local elec. fields caused by neutralization of the implanted ions.
It was possible to obtain dispersed Ag nuclei by implanting at low
sample temps. (80 K) or at low-beam current (.apprx.200 nA/cm²) to
reduce ion-beam heating. Although some migration to the surface was
seen in these samples, it occurred at higher temps. and cryst.
pptn. was achieved by annealing at 550.degree.C.
- CC 75-1 (Crystallization and Crystal Structure)
Section cross-reference(s): 57, 76

L56 ANSWER 9 OF 9 HCA COPYRIGHT 2003 ACS

84:8258 Near-surface nucleation and crystallization of an ion-
implanted lithia-alumina-silica glass.
Arnold, G. W. (Sandia Lab., Albuquerque, NM, USA). Journal of
Applied Physics, 46(10), 4466-73 (English) 1975. CODEN: JAPIAU.
ISSN: 0021-8979.

- AB A Au⁺ [7440-57-5]-**implanted** Li₂O [12057-24-8]-
Al₂O₃-SiO₂ was surface crystd. Annealing of a
glass sample implanted with 258-keV Au⁺ at 550.degree. results in
the growth of colloidal Au particles of radius 18-35-.ANG.. The Au
particles constitute sites for the **pptn.** of Li₂SiO₃
[10102-24-6] crystals at 550.degree.. Further annealing at
750.degree. allows the growth of quartz [14808-60-7] and
.beta.-spodumene [1302-37-0] crystals. The crystd. surface obtained
after the high-temp. anneal was characterized by a Knoop
microhardness no. of 626, which is of the order of that obtained for
com. vol.-crystd. glass-ceramics of similar compn.
- CC 57-1 (Ceramics)
Section cross-reference(s): 75

=> d his l57-

FILE 'HCA' ENTERED AT 10:31:23 ON 18 JUN 2003

L57 132988 S BET OR B(W)E(W)T OR S(W)A OR SURFACE#(2A)AREA# OR M2(W)
 L58 16 S L22 AND L57
 L59 495 S L9 AND L57
 L60 52 S L59 AND L8
 L61 QUE IMPLANT? OR ADMIX? OR IMMIX? OR COMMIX? OR INTERMIX?
 L62 1 S L60 AND (L61 OR L28)
 L63 0 S L59 AND (L50 OR L51)
 L64 QUE ALUMINUM# OR AL
 L65 375 S L7 AND (L8 OR L64) AND L57 AND L32
 L66 5 S L65 AND (L61 OR L28)
 L67 3 S (L62 OR L66) NOT (L47 OR L48 OR L55 OR L56)
 L68 14 S L58 NOT (L47 OR L48 OR L55 OR L56 OR L67)

=> d l67 1-3 cbib abs hitstr hitind

L67 ANSWER 1 OF 3 HCA COPYRIGHT 2003 ACS

136:122017 **Dopants** for synthesis of stable bimodally porous

titania. Kim, Jinsoo; Song, Ki Chang; Foncillas, Sandra; Pratsinis, Sotiris E. (Institute of Process Engineering, ETH-Zentrum, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.). Journal of the European Ceramic Society, 21(16), 2863-2872 (English) 2001. CODEN: JECSEK. ISSN: 0955-2219. Publisher: Elsevier Science Ltd..

AB Bimodally porous titania powders **doped** with **alumina**, zirconia, and **silica** were made by wet **pptn.** from organometallic precursors (for Al/Ti=0.05-0.4, and Zr/Ti=Si/Ti=0.1). **Doping** retards not only the anatase-to-rutile phase transformation, but also the crystallite growth of titania. So it was used to control the powder phase compn. and pore structure at high temps. The extent of the retarding effect on pore structure and phase transformation increased with increasing **alumina** concn. The effectiveness of these **dopants** follows the order zirconia >**silica** >**alumina**. The **dopants** also reduce the loss of **surface area** of the calcined powders by decreasing the sintering and phase transformation rates. All powders exhibited bimodal pore size distributions (PSD) with fine intra-particle pores (1-4 nm) and larger inter-particle pores (10-120 nm). However, the intra-particle pores of the pure titania disappeared at 600.degree.C, while the bimodal PSD of **doped** titania was maintained up to 750.degree.C.

IT 1344-28-1, Aluminum oxide (Al2O3)

), uses 7631-86-9, Silica, uses

(**dopant**; effects of **alumina**, **silica**

, and zirconia **dopants** on structure stability of titania porous ceramic powders)

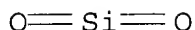
RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



- CC 57-2 (Ceramics)
- ST titania porous ceramic powder **doping** structure stability;
zirconia **doping** titania porous ceramic powder structure
stability; **alumina doping** titania porous ceramic
powder structure stability; **silica doping**
titania porous ceramic powder structure stability
- IT Powders
(ceramic, titania; effects of **alumina**, **silica**
, and zirconia **dopants** on structure stability of
titania porous ceramic powders)
- IT Sintering
Structural phase transition
Surface area
Thermal stability
(effects of **alumina**, **silica**, and zirconia
dopants on structure stability of titania porous ceramic
powders)
- IT Ceramics
(powders, titania; effects of **alumina**, **silica**
, and zirconia **dopants** on structure stability of
titania porous ceramic powders)
- IT 1314-23-4, Zirconium oxide (ZrO₂), uses 1344-28-1,
Aluminum oxide (Al₂O₃), uses
7631-86-9, **Silica**, uses
(**dopant**; effects of **alumina**, **silica**
, and zirconia **dopants** on structure stability of
titania porous ceramic powders)
- IT 1317-80-2, Rutile (TiO₂)
(effects of **alumina**, **silica**, and zirconia
dopants on structure stability of titania porous ceramic
powders)
- IT 1317-70-0, Anatase (TiO₂)
(effects of **alumina**, **silica**, and zirconia
dopants on structure stability of titania porous ceramic
powders)
- IT 13463-67-7, Titanium oxide (TiO₂), processes
(porous powders; effects of **alumina**, **silica**,
and zirconia **dopants** on structure stability of titania
porous ceramic powders)
- L67 ANSWER 2 OF 3 HCA COPYRIGHT 2003 ACS
- 134:330181 French SON 68 nuclear glass alteration mechanisms on contact
with clay media. Gin, S.; Jollivet, P.; Mestre, J. P.; Jullien, M.;
Pozo, C. (Valrho DRRV/SCD, Commissariat a l'Energie Atomique (CEA),
Bagnols-sur-Ceze, 30207, Fr.). Applied Geochemistry, 16(7-8),
861-881 (English) 2001. CODEN: APPGEY. ISSN: 0883-2927.
Publisher: Elsevier Science Ltd..
- AB The leaching behavior of the nonradioactive French SON 68

(R7T7-type) nuclear glass was investigated in the presence of FoCa7 clay. Static expts. were carried out at 90.degree.C under conditions favorable to convective transfer. Three test environments were compared: a clay medium, the same clay medium **doped** with 2.5 wt.% **silica** gel, and pure water. These expts. showed that in raw clay the glass alteration rate remained near the initial value for several hundred days, whereas in pure water at the same temp. and with the same glass-**surface -area-to-soln.-vol. (S/V)** ratio the alteration rate quickly dropped by several orders of magnitude after the formation of a protective gel layer. This major difference between the two media can be attributed to transfer of the principal gel-forming elements (Si, **Al**, Ca) into the clay medium as a result of sorption phenomena and probably the **pptn.** of silicate phases. The addn. of **silica** gel to the clay not only neutralizes the clay sorption capacity, but also protects the glass from significant alteration (the glass was altered appreciably less than in pure water). This article discusses the mechanisms limiting the glass alteration kinetics in the test media. The gel that forms by reconstitution of hydrolyzed glass species at the glass/clay interface is shown to constitute a diffusion barrier whose effectiveness depends to a large degree on the conditions under which species are removed by the external medium. Interpreting the exptl. data from this standpoint leads to a reexamn. of the classic model in which the glass alteration kinetics are inhibited by the dissolved silicon content.

IT 1344-28-1, Aluminum oxide (Al2O3)
, processes 7631-86-9, Silica, processes
(glass, borosilicate, nuclear wasteform; alteration mechanisms of
borosilicate nuclear waste glass on contact with clay media)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 57-1 (Ceramics)
Section cross-reference(s): 71
IT Diffusion
Surface area
(alteration mechanisms of borosilicate nuclear waste glass on
contact with clay media)
IT Silica gel, formation (nonpreparative)
(alteration product; alteration mechanisms of borosilicate
nuclear waste glass on contact with clay media)
IT 1303-86-2, Boron oxide (B2O3), processes 1305-78-8, Calcia,
processes 1309-37-1, Ferric oxide, processes 1313-59-3, Sodium
oxide (Na2O), processes 1314-13-2, Zinc oxide (ZnO), processes
1314-23-4, Zirconium oxide (ZrO2), processes 1344-28-1,

Aluminum oxid (Al₂O₃), processes

7631-86-9, Silica, processes 12057-24-8, Lithium oxide (Li₂O), processes

(glass, borosilicate, nuclear wasteform; alteration mechanisms of borosilicate nuclear waste glass on contact with clay media)

L67 ANSWER 3 OF 3 HCA COPYRIGHT 2003 ACS

121:234004 Manufacture of compositions based on mixed oxides of cerium and zirconium, the compositions obtained and their use in the manufacture of catalysts and catalyst supports, and the monolithic catalysts obtained and their use. Chopin, Thierry; Vilmin, Gabriel (Rhône Poulenc Chimie, Fr.). Fr. Demande FR 2701471 A1 19940819, 23 pp. (French). CODEN: FRXXBL. APPLICATION: FR 1993-1450 19930210.

AB The process comprises mixing (in stoichiometric proportions based on the final compn. desired) a Zr sol with a Ce sol having Zr sol/Ce sol particle diam. ratio .gtoreq.5, adding a base, and recovering and calcining the **ppt.** The mixed oxides have sp.

surface area .gtoreq.10 m²/g.

The catalysts and catalyst supports may contain **Al₂O₃.**

The catalysts comprise a monolithic refractory support coated with catalytically active elements, and used in catalytic converters.

IT **1344-28-1, Alumina, uses 7631-86-9, Silica, uses**

(**dopant**; in cerium zirconium oxide catalysts and catalyst supports for catalytic converters)

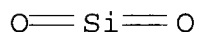
RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C01G025-02

ICS C01F017-00; B01J021-06; B01J023-10; B01J037-00; B01D053-36

CC 49-3 (Industrial Inorganic Chemicals)

Section cross-reference(s): 59, 67

ST cerium zirconium oxide catalyst support; **aluminum** cerium zirconium oxide support; catalytic converter catalyst support; **dopant** cerium zirconium oxide

IT Alkaline earth oxides

Rare earth oxides

(**dopants**; in cerium zirconium oxide catalysts and catalyst supports for catalytic converters)

IT 1303-86-2, Boron oxide, uses 1304-28-5, Barium oxide, uses

1304-76-3, Bismuth oxide, uses 1305-78-8, Calcia, uses

1308-38-9, Chromium oxide (Cr₂O₃), uses 1309-48-4, Magnesia, uses

1312-81-8, Lanthanum oxide (La₂O₃) 1313-96-8, Niobium pentoxide

1313-97-9, Neodymium oxide (Nd₂O₃) 1314-36-9, Yttria, uses

1314-62-1, Vanadium pentoxide, uses **1344-28-1,**

Alumina, uses 7631-86-9, Silica, uses

12024-21-4, Gallium oxide (Ga₂O₃) 12036-32-7, Praseodymium oxide (Pr₂O₃) 12060-08-1, Scandium oxide (Sc₂O₃) 13463-67-7, Titania, uses 37300-04-2, Thorium oxide 59763-75-6, Tantalum oxide

(**dopant**; in cerium zirconium oxide catalysts and catalyst supports for catalytic converters)

IT 1310-58-3, Potassium hydroxide, reactions 1310-73-2, Sodium hydroxide, reactions 1336-21-6, Ammonium hydroxide (**precipitant**; in cerium zirconium oxide catalysts and catalyst support manuf. for catalytic converters)

=> d 168 1-14 cbib abs hitstr hitind

L68. ANSWER 1 OF 14 HCA COPYRIGHT 2003 ACS

138:371082 Preparation of highly ordered mesoporous molecular sieves.

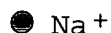
Fortier, Luc; Fournier, Pierre; Kaliaguine, Serge; ~~Trong On, Do~~ (Silicycle Inc., Can.). PCT Int. Appl. WO 2003037511 A1 20030508, 44 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-CA1682 20021101. PRIORITY: US 2001-PV330847 20011101.

AB Highly ordered mesoporous silica mol. materials are prepd. using **sodium silicate** as a silica source, **sulfuric acid** and nonionic poly(alkylene oxide) surfactants or nonionic amphiphilic bloc copolymers as structure-directing agents. An aq. soln. of **sodium silicate** is added to an aq. soln. of the surfactant at 12-28.degree.C and the mixt. is stirred for at least two hours to obtain a homogeneous soln. **Sulfuric acid** (80%) is added to the soln. to form a gel which is aged by stirring at ambient temp. for 12-24 h and subsequently heated for at least 24 h at 60-150.degree.C to increase silanol group condensation, thereby forming a solid ppt. The recovered ppt. is treated with **water** at 60-135.degree.C and near neutral pH to remove residual surfactant and to complete silanol group condensation. The ppt. is calcined at 400-650.degree.C. Instead of **sodium silicate**, sodium aluminate can be used as starting material. The surfactants can be BRIJ 56, BRIJ 58, BRIJ 76, PLURONIC P-123, PLURONIC F-127. The mesoporous silica materials obtained have hexagonal and cubic structures, uniform pore size and high **surface areas**.

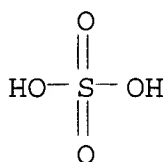
IT 1302-42-7, Sodium aluminate 7664-93-9, **Sulfuric acid**, reactions (prepn. of highly ordered mesoporous mol. sieves)

RN 1302-42-7 HCA

CN Aluminate (AlO₂I-), sodium (9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B01J035-10
ICS B01J029-03; C01B037-02; C01B037-00; B01J037-03
CC 49-4 (Industrial Inorganic Chemicals)
IT Molecular sieves
Pore size
Surface area
(prepn. of highly ordered mesoporous mol. sieves)
IT **1302-42-7**, Sodium aluminate 3087-36-3, Titanium
tetraethoxide **7664-93-9**, **Sulfuric acid**
, reactions
(prepn. of highly ordered mesoporous mol. sieves)

L68 ANSWER 2 OF 14 HCA COPYRIGHT 2003 ACS

137:218674 Catalytic activities of nickel-containing catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties. Sohn, Jong Rack (Engineering College, Department of Industrial Chemistry, Kyungpook National University, Taegu, 702-701, S. Korea). Catalysis Today, 73(1-2), 197-209 (English) 2002. CODEN: CATTEA. ISSN: 0920-5861. Publisher: Elsevier Science B.V..

AB Nickel oxide-silica catalysts were prep'd. by pptn. from an acidic soln. of a nickel salt-**sodium silicate** mixt. Two types of nickel hydrosilicate, montmorillonite and antigorite are formed in the catalysts. Catalytic activities of nickel silicates for ethylene dimerization and butene isomerization run parallel when the catalysts are activated by evacuation at elevated temps., giving two maxima in activities. The variations in catalytic activities are closely correlated to the acidity of catalysts. The acid site responsible for the catalytic activity is protonic on montmorillonite, while non-protonic on antigorite, as evidenced by the effect of **water** content and the IR spectra of adsorbed pyridine. Catalytic activities of NiO-TiO₂ catalysts modified with H₂SO₄, H₃PO₄, H₃BO₃ and H₂SeO₄ for ethylene

dimerization and butene isomerization were examd. The order of catalytic activities for both reactions was found to be NiO-TiO₂/SO₄²⁻ > NiO-TiO₂/PO₄³⁻ > NiO-TiO₂/BO₃³⁻ > NiO-TiO₂/SeO₄²⁻ > NiO-TiO₂, showing clear dependence of catalytic activity upon acid strength. Catalytic activity of nickel sulfate supported on .gamma.-Al₂O₃ (NiSO₄/.gamma.-Al₂O₃) for ethylene dimerization is also closely correlated to the acidity of catalysts, showing that the active sites consist of a low-valent nickel (Ni⁺) and an acid.

IT 1344-28-1, Alumina, uses
(JRC-ALO 2; catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

RN 1344-28-1 HCA

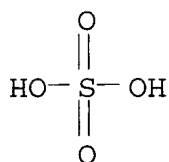
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7664-93-9, Sulfuric acid, uses
(catalyst modifier; catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

ST catalytic activity nickel catalyst butene isomerization acid modified; ethylene dimerization nickel catalyst acid modified; **sulfuric acid** modified catalyst ethylene dimerization butene isomerization; phosphoric acid modified catalyst ethylene dimerization; selenic acid modified catalyst ethylene dimerization

IT Binding energy
Dimerization catalysts
Isomerization catalysts

Surface area

pH

(catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

IT 1344-28-1, Alumina, uses
(JRC-ALO 2; catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

IT 7664-38-2, Phosphoric acid, uses 7664-93-9, **Sulfuric acid**, uses 7783-08-6, Selenic acid
10043-35-3, Boric acid, uses

(catalyst modifier; catalytic activities of nickel-contg.

catalysts for ethylene dimerization and butene isomerization and their relationship to acidic ~~properties~~

L68 ANSWER 3 OF 14 HCA COPYRIGHT 2003 ACS

132:323641 Aluminum silicon oxide gel granules and their manufacture. Zhang, Chongmin; Li, Jianshe; Hu, Ximei (Qingdao Haiyang Chemical Industry Group Corp., Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1206020 A 19990127, 10 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1997-105983 19970721.

AB The granules have a $[(\text{SiO}_4)_m(\text{AlO}_3)]$ network contg. 89.5-98% SiO_2 and 0.5-9% Al_2O_3 , av. particle diam/ 0.5-8 mm, sp. **surface area** 450-800 m^2/g , av. pore vol. 0.3-0.6 mL/g, av. pore dial. 0.0015-0.0035 μm , and adsorption capacities 5-15 and 30-50% at .ltoreq.20 and .ltoreq.80% relative humidities, resp. The granules are prepd. by reacting a **Na silicate** soln., having SiO_2 content 8-22%, with an acidified 0.3-12% $\text{Al}_2(\text{SO}_4)_3$ soln. at 5-25.degree., 0.1-1.0 MPa, and pH 7-12 in a cascade mixing-granulating means and spraying the reaction mixt. in air to form granules; aging the granules in a pH 7-11 soln. at 30-60.degree. for 1-6 h; soaking in an acidic soln. at 30-69.degree. for 0.5-10 h; washing 2-15 times with **water** at 20-70.degree. with a washing duration of 1-6 h/wash and a total of 6-30 h; soaking an **aq.** 0.01-% surfactant soln. having surface tension .ltoreq.40 dyne/cm for 1-24 h; and drying in 60-180.degree. air flow for 3-72 h.

IT 159995-97-8P, Aluminum silicon oxide
(structure and properties and manuf. of aluminum silicon oxide gel granules)

RN 159995-97-8 HCA

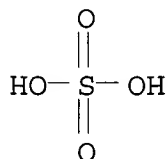
CN Aluminum silicon oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Si	x	7440-21-3
Al	x	7429-90-5

IT 7664-93-9, Sulfuric acid, uses
(structure and properties and manuf. of aluminum silicon oxide gel granules)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 1344-09-8, Sodium silicate

10043-01-3, Aluminum sulfate

(structure and properties and manuf. of aluminum silicon oxide gel granules)

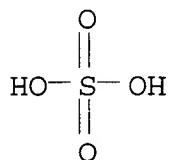
RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

IC ICM C08G077-58

ICS B01J002-04; B01D053-28

CC 49-11 (Industrial Inorganic Chemicals)

IT 159995-97-8P, Aluminum silicon oxide

(structure and properties and manuf. of aluminum silicon oxide gel granules)

IT 7664-93-9, Sulfuric acid, uses

(structure and properties and manuf. of aluminum silicon oxide gel granules)

IT 1344-09-8, Sodium silicate 7647-01-0,

Hydrochloric acid, processes 7697-37-2, Nitric acid, processes

10043-01-3, Aluminum sulfate

(structure and properties and manuf. of aluminum silicon oxide gel granules)

L68 ANSWER 4 OF 14 HCA COPYRIGHT 2003 ACS

131:313424 Suspension type grout agents and soil strengthening thereby. Kitamura, Tadashi; Nagata, Masahiko (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 11293246 A2 19991026 Heisei, 29 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-290975 19981013. PRIORITY: JP 1998-32986 19980216.

AB The suspension type grout agents comprise (1) **water**

-granulated blast-furnace slag having 95 wt.% particle diam. on the particle diam. accumulative curve .ltoreq.15 .mu.m and sp.

surface area 0.85-3 m²/g, (2)

Ca(OH)₂ and/or CaO having 95 wt.% particle diam. on the particle diam. accumulative curve .ltoreq.30 .mu.m and sp. **surface**

area 1-50 m²/g, (3) bulky org. macromol.

dispersion aids having inertia square radius .gtoreq.150 .ANG., (4)

water-sol. sulfates selected from bisulfates, sulfites,

bisulfites, alkali metal sulfates, persulfates, thiosulfates, MgSO₄,

Al sulfate, and alum, (5) soln. type alkali stimulants selected from (a) NaOH and/or KOH soln., (b) Na₂CO₃ and/or K₂CO₃ or KNaCO₃, (c) solid or liq. sea brine, (d) Na aluminate and/or K aluminate, (e) alkali **water** glass soln., and/or (f) colloidal SiO₂ soln. at pH 7.5-12, and (6) **water** wherein **water** /((Ca(OH)₂+CaO+slag) ratio 1-6, dispersion aid/((Ca(OH)₂+CaO+slag) ratio 0.005-0.05, and the **water**-sol. sulfate content is 1-100 kg/m³, and the alkali stimulant content is 0.001-100 kg (as solids)/m³. The grout agents are press impregnated into sandy soils and/or conglomerative soils contg. org. acids (e.g., humic acid) through grout injection tubes to strengthen the soils. The grout agents also used for construction of underground piles or walls.

IT **1344-09-8, Water glass 10043-01-3,**
Aluminum sulfate **11137-59-0**, Potassium aluminate
(strengthening of humic acid-contg. soils by suspension type
grouts contg. slags and lime and dispersants and sulfates and
alkali stimulants)

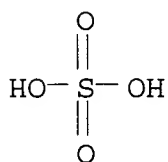
RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

RN 11137-59-0 HCA

CN Aluminum potassium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
K	x	7440-09-7
Al	x	7429-90-5

IC ICM C09K017-40

ICS C09K017-02; C09K017-06; C09K017-12; E02D003-12; E02D005-18;
C09K103-00

CC 58-5 (Cement, Concrete, and Related Building Materials)

IT 497-19-8, Sodium carbonate (Na₂CO₃), miscellaneous 584-08-7,
Potassium carbonate (K₂CO₃) 1305-62-0, Calcium hydroxide
(Ca(OH)₂), miscellaneous 1305-78-8, Calcium oxide (CaO),

miscellaneous 1310-58-3, Potassium hydroxide, miscellaneous
1310-73-2, Sodium hydroxide (NaOH), miscellaneous **1344-09-8**
, **Water glass** 7487-88-9, **Sulfuric acid**
magnesium salt (1:1), miscellaneous 7631-86-9, Silica,
miscellaneous 7631-90-5, Sodium bisulfite 7681-38-1, Sodium
bisulfate 7727-21-1, Potassium persulfate 7757-82-6, Sodium
sulfate, miscellaneous 7772-98-7, Sodium thiosulfate 7778-80-5,
Potassium sulfate, miscellaneous **10043-01-3**, Aluminum
sulfate 10424-09-6, Potassium sodium carbonate (KNaCO₃)
11137-59-0, Potassium aluminate 11138-49-1, Sodium
aluminate

(strengthening of humic acid-contg. soils by suspension type
grouts contg. slags and lime and dispersants and sulfates and
alkali stimulants)

L68 ANSWER 5 OF 14 HCA COPYRIGHT 2003 ACS

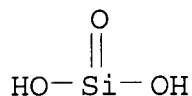
131:299817 Powders of amorphous silica or mixed oxide-silica having a
continuous network matrix and preparation thereof for catalyst
supports for olefin polymerization. Pecoraro, Theresa A.; Chan,
Ignatius Y.; Whaley, Darryl K.; Auburn, Pamela R. (Chevron Chemical
Company LLC, USA). PCT Int. Appl. WO 9952627 A1 19991021, 86 pp.
DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,
CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,
MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK,
ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN,
TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US7616
19990407. PRIORITY: US 1998-60340 19980414.

AB An amorphous silica or mixed oxide-silica base compn. comprises a
nonparticulate, dense, continuous network matrix and encapsulated,
less dense, nonparticulate regions with true macropores. The pore
size and distribution and vol. of the pore size can be tailored over
a wide range for unique microstructures and varied phys. properties.
Thus, 4.098 kg soln. of 1:3.22 Na₂O-SiO₂ in 15 kg deionized
water was adjusted to pH <0 with **aq.** H₂SO₄, gelled
in a high-shear reactor with addn. of 127 g acid/min and 450-639 g
base/min, washed, spray-dried, and calcined, giving **surface**
area (BET) 564 m²/g, pore vol.
1.02 cc/g, mean mesopore diam. 101.ANG., and a continuous network
matrix having d. 2 and matrix pore size 10 nm. An **aq.**
chromium(III) acetate hydroxide soln. was deposited on the powder,
and the catalyst (1.0 wt.% Cr) was used with IBAO (0.126 g catalyst,
Al-Cr ratio 8.3) to polymerize ethylene, showing 96.40 L ethylene
consumed in 0.88 h with activity 1625.8 g/g/h and polymer yield
180.27 g, compared with 80.10 L, 1.15 h, 632.8 g/g/h, and 109.16 g,
resp., when using 0.150 g EP 30X catalyst (Al-Cr ratio 5.9).

IT **6834-92-0**

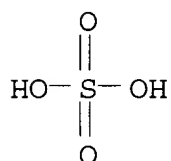
(gelation of; powders of amorphous silica or mixed oxide-silica
having a continuous network matrix for catalyst supports for
olefin polymn.)

RN 6834-92-0 HCA
CN Silicic acid (H₂SiO₃), disodium salt (8CI, 9CI) (CA INDEX NAME)



⊙2 Na

IT 7664-93-9, **Sulfuric acid**, uses
(in gelation of silica or mixed oxide-silica to form a continuous network matrix for catalyst supports for olefin polymn.)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 159995-97-8, Aluminum silicon oxide
(powders of amorphous silica or mixed oxide-silica having a continuous network matrix for catalyst supports for olefin polymn.)
RN 159995-97-8 HCA
CN Aluminum silicon oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	x	17778-80-2
Si	x	7440-21-3
Al	x	7429-90-5

IC ICM B01J021-08
ICS B01J021-12; C08F010-00; C01B033-12
CC 35-3 (Chemistry of Synthetic High Polymers)
IT 6834-92-0
(gelation of; powders of amorphous silica or mixed oxide-silica having a continuous network matrix for catalyst supports for olefin polymn.)
IT 57-13-6, Urea, uses 506-87-6, Ammonium carbonate 1066-33-7, Ammonium bicarbonate 1336-21-6, Ammonium hydroxide
7664-93-9, **Sulfuric acid**, uses
(in gelation of silica or mixed oxide-silica to form a continuous network matrix for catalyst supports for olefin polymn.)

IT 7631-86-9, Silica, uses 52337-09-4, Silica titania
 159995-97-8, Aluminum silicon oxide 174179-90-9, Silicon
 vanadium oxide 174633-44-4, Silicon zirconium oxide
 (powders of amorphous silica or mixed oxide-silica having a
 continuous network matrix for catalyst supports for olefin
 polymn.)

L68 ANSWER 6 OF 14 HCA COPYRIGHT 2003 ACS

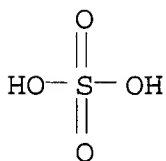
130:360441 Preparation and use of acicular hematite particles as
 non-magnetic undercoat layer of magnetic recording apparatus.
 Hayashi, Kazuyuki; Tanaka, Yasuyuki; Iwasaki, Keisuke; Morii, Hiroko
 (Toda Kogyo Corp., Japan). Eur. Pat. Appl. EP 919522 A1 19990602,
 130 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR,
 IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English).
 CODEN: EPXXDW. APPLICATION: EP 1998-309695 19981126. PRIORITY: JP
 1997-342163 19971126; JP 1998-64739 19980227.

AB Needle-shaped (i.e., acicular) hematite particles suitable as
 non-magnetic particles for a non-magnetic undercoat layer of a
 magnetic recording medium have a geometrical std. deviation of the
 major axis diam. of .ltoreq.1.50, a geometrical std. deviation of
 the minor axis diam. of .ltoreq.1.35, a BET sp.
 surface area of 35.9-150 m²/g,
 and an av. major axis diam. of 0.004-0.295 .mu.m. The particles can
 also contain 0.05-50 wt.% oxides or hydroxides of aluminum or
 silicon (calcd. as Al or Si). The particles are prepd. by pptn. of
 goethite (e.g., of aq. FeSO₄ by Na₂CO₃), heat treatment of
 acicular goethite particles (major axis diam. 0.01-0.25 .mu.m,
 geometrical std. deviation of minor axis diam. .ltoreq.1.37) at
 100-200.degree. followed by dehydration of the dried particles at
 550-850.degree.. A magnetic recording medium fabricated from these
 particles consisted of an undercoat of the non-magnetic particles,
 in which the particles are deposited on a non-magnetic base film
 using a binder resin (typically a sulfonated polymer); a magnetic
 coating film of a binder resin and magnetic particles completes the
 recording medium.

IT 7664-93-9, Sulfuric acid, uses
 (acid dissoln. with; in prepn. and use of acicular hematite
 particles as non-magnetic undercoat layer of magnetic recording
 app.)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 1302-42-7, Sodium aluminate 10043-01-3, Aluminum
 sulfate 21645-51-2, Aluminum hydroxide, reactions
 (aluminum source; in prepn. and use of acicular hematite

particles as non-magnetic undercoat layer of magnetic recording app.)

RN 1302-42-7 HCA

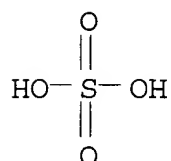
CN Aluminate (AlO₂⁻), sodium (9CI) (CA INDEX NAME)



Na⁺

RN 10043-01-3 HCA

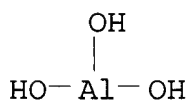
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

RN 21645-51-2 HCA

CN Aluminum hydroxide (Al(OH)₃) (9CI) (CA INDEX NAME)



IT 1344-09-8, **Water glass**

(silicon source; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C01G049-06

ICS G11B005-704

CC 77-8 (Magnetic Phenomena)

Section cross-reference(s): 42, 49

IT 7664-93-9, **Sulfuric acid**, uses

(acid dissoln. with; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

IT 1302-42-7, Sodium aluminate 10043-01-3, Aluminum

sulfate 11138-49-1, Sodium aluminate 21645-51-2,

Aluminum hydroxide, reactions

(aluminum source; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

IT 1344-09-8; Water glass 7631-86-9, Colloidal silica, reactions

(silicon source; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

L68 ANSWER 7 OF 14 HCA COPYRIGHT 2003 ACS

129:232956 Process for removing sulfur compounds from hydrocarbon streams. Kulprathipanja, Santi; Nemeth, Laszlo T.; Holmgren, Jennifer S. (Uop LLC, USA). U.S. US 5807475 A 19980915, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1996-751829 19961118.

AB A process for removing sulfur contg. compds. from various hydrocarbon streams is disclosed and claimed. The process involves contacting the feedstream with an adsorbent such as nickel exchanged zeolite X or Y, or a smectite layered clay having a **surface area** of at least 150 m² /g, thereby adsorbing the sulfur compds. onto the adsorbent.

IT 12174-11-7, Palygorskite
(Minugel; process for removing sulfur compds. from hydrocarbon streams)

RN 12174-11-7 HCA

CN Palygorskite ([Mg(Al_{0.5}-1Fe₀-0.5)]Si₄(OH)O₁₀.4H₂O) (9CI) (CA INDEX NAME)

CM 1

CRN 111059-81-5

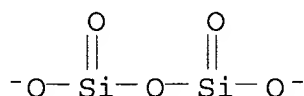
CMF Al . Fe . H O . Mg . O5 Si2

CCI TIS

CM 2

CRN 20328-07-8

CMF O5 Si2



CM 3

CRN 14280-30-9

CMF H O

OH⁻

CM 4

CRN 7439-95-4

CMF Mg

Mg

CM 5

CRN 7439-89-6

CMF Fe

Fe

CM 6

CRN 7429-90-5

CMF Al

Al

IT 1302-42-7, Aluminum sodium oxide (AlNaO₂) 1319-41-1
 , Saponite 1344-09-8, Water glass
 1344-28-1, Alumina, uses 12172-85-9, Beidellite
 12174-06-0, Nontronite
 (process for removing sulfur compds. from hydrocarbon streams)
 RN 1302-42-7 HCA
 CN Aluminate (AlO₂⁻), sodium (9CI) (CA INDEX NAME)



Na⁺

RN 1319-41-1 HCA
 CN Saponite ((Mg_{0.5}-1Fe_{0-0.5})₃(Si_{3.67}Al_{0.33})(Na_{0-0.33}Ca_{0-0.17})(OH)₂O_{10.4}H₂O) (9CI) (CA INDEX NAME)

CM 1

CRN 135663-11-5

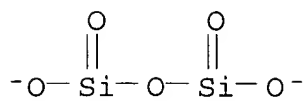
CMF Al . Ca . Fe . H O . Mg . Na . O₅ Si₂ . O

CCI TIS

CM 2

CRN 20328-07-8

CMF 05 Si2



CM 3

CRN 17778-80-2

CMF O

O

CM 4

CRN 14280-30-9

CMF H O

OH⁻

CM 5

CRN 7440-70-2

CMF Ca

Ca

CM 6

CRN 7440-23-5

CMF Na

Na

CM 7

CRN 7439-95-4

CMF Mg

Mg

CM 8

CRN 7439-89-6

CMF Fe

Fe

CM 9

CRN 7429-90-5

CMF Al

Al

RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 12172-85-9 HCA

CN Beidellite (Al₂(Si_{3.67}Al_{0.33})(Na_{0-0.33}Ca_{0-0.17})(OH)₂O₁₀.xH₂O) (9CI)
(CA INDEX NAME)

CM 1

CRN 111059-65-5

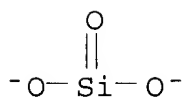
CMF Al . Ca . Na . O₃ Si

CCI TIS

CM 2

CRN 15593-90-5

CMF O₃ Si



CM 3

CRN 7440-70-2

CMF Ca

Ca

CM 4

CRN 7440-23-5

CMF Na

Na

CM 5

CRN 7429-90-5

CMF Al

Al

RN 12174-06-0 HCA

CN Nontronite (Fe₂(Si_{3.67}Al_{0.33})Na_{0.33}(OH)₂O₁₀.xH₂O) (9CI) (CA INDEX NAME)

CM 1

CRN 111186-70-0

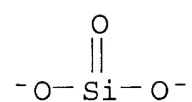
CMF Al . Fe . Na . O₃ Si

CCI TIS

CM 2

CRN 15593-90-5

CMF O₃ Si



CM 3

CRN 7440-23-5

CMF Na

Na

CM 4

CRN 7439-89-6

CMF Fe

Fe

CM 5

CRN 7429-90-5

CMF Al

Al

IC ICM C10G017-00

NCL 208208000R

CC 51-4 (Fossil Fuels, Derivatives, and Related Products)

IT **12174-11-7**, Palygorskite
(Minugel; process for removing sulfur compds. from hydrocarbon streams)

IT 497-19-8, Sodium carbonate (Na_2CO_3), uses **1302-42-7**,
Aluminum sodium oxide (AlNaO_2) 1308-38-9, Chromia, uses
1310-73-2, Sodium hydroxide (NaOH), uses 1314-23-4, Zirconium
oxide (ZrO_2), uses 1318-93-0, Montmorillonite, uses
1319-41-1, Saponite 1336-21-6, Ammonium hydroxide
1344-09-8, Water glass **1344-28-1**,
Alumina, uses 7487-88-9, **Sulfuric acid**
magnesium salt (1:1), uses 7631-86-9, Silica, uses 7631-95-0,
Sodium molybdate (Na_2MoO_4) 7704-34-9, Sulfur, uses 7718-54-9,
Nickel chloride (NiCl_2), uses **12172-85-9**, Beidellite
12173-47-6, Hectorite **12174-06-0**, Nontronite 12424-32-7,
Sauconite 13463-67-7, Titanium oxide (TiO_2), uses
(process for removing sulfur compds. from hydrocarbon streams)

L68 ANSWER 8 OF 14 HCA COPYRIGHT 2003 ACS

127:362487 Toothpaste composition comprising a silica and calcium
carbonate based abrasive or additive, compatible with fluorine.
Amiche, Frederic; Dromard, Adrien (Rhone-Poulenc Chimie, Fr.;
Amiche, Frederic; Dromard, Adrien). PCT Int. Appl. WO 9739728 A1
19971030, 22 pp. DESIGNATED STATES: W: AL, AU, BA, BB, BG, BR, CA,
CN, CU, CZ, EE, GE, HU, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG,
MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TR, TT, UA, US, UZ, VN, YU,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH,
CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE,
NL, PT, SE, SN, TD, TG. (French). CODEN: PIXXD2. APPLICATION: WO
1997-FR721 19970422. PRIORITY: FR 1996-5135 19960422.

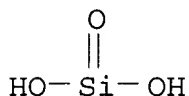
AB A toothpaste compn. comprising at least one decay preventing agent,
with a fluorine-contg. compd. base, and at least one silica, is

characterized in that the silica is constituted of particles contg. a dense active silica shell and a calcium carbonate core. The compatibility of an abrasive comprising silica shell and calcium carbonate core (**BET** = 2.9m2/g) (prepn. given) in a mixt. of **aq.** soln. of sorbitol and glycerol with sodium monofluorophosphatae was 83 as compared with 76% Sturcal H.

IT ~~7784-18-1~~, Aluminum fluoride
(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)
RN 7784-18-1 HCA
CN Aluminum fluoride (AlF3) (9CI) (CA INDEX NAME)

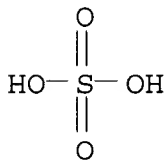


IT 6834-92-0 7664-93-9, Sulfuric acid, reactions
(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)
RN 6834-92-0 HCA
CN Silicic acid (H2SiO3), disodium salt (8CI, 9CI) (CA INDEX NAME)



⊙2 Na

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM A61K007-16
ICS C09C003-06
CC 62-7 (Essential Oils and Cosmetics)
IT 471-34-1, Calcium carbonate, biological studies 7320-34-5, Potassium pyrophosphate 7631-86-9, Silica, biological studies 7632-05-5, Sodium orthophosphate 7681-49-4, Sodium fluoride, biological studies 7722-88-5 7758-29-4, Sodium tripolyphosphate 7778-53-2, Potassium orthophosphate **7784-18-1**, Aluminum

fluoride 7789-23-3, Potassium fluoride 7789-24-4, Lithium fluoride, biological studies 7789-75-5, Calcium fluoride, biological studies 10377-52-3 12125-01-8, Ammonium fluoride 13537-32-1, Monofluorophosphoric acid 13764-79-9, Potassium hexametaphosphate 13845-36-8, Potassium tripolyphosphate 15804-33-8, Lithium tripolyphosphate 37621-20-8 67395-39-5

(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)

IT 64-18-6, Formic acid, reactions 64-19-7, Acetic acid, reactions 144-55-8, Carbonic acid monosodium salt, reactions 463-79-6, Carbonic acid, reactions 1312-76-1, Potassium silicate **6834-92-0** 7631-99-4, Sodium nitrate, reactions 7647-01-0, Hydrochloric acid, reactions 7647-14-5, Sodium chloride (NaCl), reactions **7664-93-9, Sulfuric acid**, reactions 7697-37-2, Nitric acid, reactions 7757-82-6, Sodium sulfate, reactions (toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)

L68 ANSWER 9 OF 14 HCA COPYRIGHT 2003 ACS

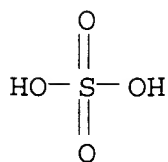
127:38990 Treatment of flue gases and ashes from municipal incinerators to prevent heavy metal leachates in landfills. Nomura, Takuji; Uejima, Kenji (Kanegafuchi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09099215 A2 19970415 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-260490 19951006.

AB Incinerator flue gases contg. HCl and noxious pollutants are neutralized by blowing with slaked lime having sp. **surface area** .gtoreq.30 m²/g in a flue duct prior to passing through bag filters. The ashes contg. heavy metals (esp., Pb) from cyclones or elec. precipitators are treated by reacting with .gtoreq.1 stabilizer selected from cement, **water** glass, phosphates, chelating agents, inorg. adsorbents, and neutralizing agents to form insol. compds. for preventing leachates in landfills. The neutralizing agents may include sulfate **salts**, Al(OH)₃, FeCl₃ and H₂SO₄. The inorg. adsorbents are preferably Al silicate or silica powder having sp. **surface area** .gtoreq.200 m²/g.

IT **7664-93-9, Sulfuric acid**, processes (neutralizing agent; in treatment of flue gases and ashes from municipal incinerators to prevent heavy metal leachates in landfills)

RN 7664-93-9 HCA

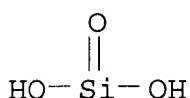
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT 1344-09-8, **Water glass** 14504-95-1,
Aluminum silicate (Al₂(SiO₃)₃) 21645-51-2, Aluminum
hydroxide (Al(OH)₃), processes
(stabilizer; in treatment of flue gases and ashes from municipal
incinerators to prevent heavy metal leachates in landfills)

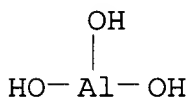
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 14504-95-1 HCA
CN Silicic acid (H₂SiO₃), aluminum salt (3:2) (8CI, 9CI) (CA INDEX
NAME)



⊙ 2/3 Al

RN 21645-51-2 HCA
CN Aluminum hydroxide (Al(OH)₃) (9CI) (CA INDEX NAME)



IC ICM B01D053-68
ICS B01D053-34; B09B003-00

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 60

IT **7664-93-9, Sulfuric acid**, processes
7705-08-0, Ferric chloride, processes
(neutralizing agent; in treatment of flue gases and ashes from
municipal incinerators to prevent heavy metal leachates in
landfills)

IT **1344-09-8, Water glass** 7558-79-4, Disodium
hydrogen phosphate 14504-95-1, Aluminum silicate
(Al₂(SiO₃)₃) 16721-80-5, Sodium hydrogen sulfide
21645-51-2, Aluminum hydroxide (Al(OH)₃), processes
(stabilizer; in treatment of flue gases and ashes from municipal
incinerators to prevent heavy metal leachates in landfills)

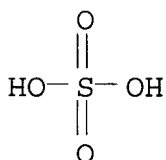
L68 ANSWER 10 OF 14 HCA COPYRIGHT 2003 ACS
126:119667 Ferrierite-type crystalline ~~zeolites~~ their manufacture,
especially high-surface area hydrogen
ferrierite, and process for isomerizing olefins using the ferrierite
as catalyst. Pasquale, Gary Michael; Murray, Brendan Dermot (Shell
Oil Co., USA; Pq Corporation). PCT Int. Appl. WO 9640587 A1

19961219, 37 pp. DESIGNATED STATES: W: AL, AM, AU, BB, BG, BR, CA, CN, CZ, EE, GE, HU, IS, JP, KG, KP, KR, LK, LR, LS, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, TT, UA, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US9272 19960606. PRIORITY: US 1995-481724 19950607; US 1995-481723 19950607.

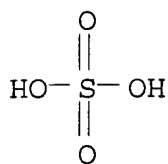
AB The zeolites have compn. (based on the oxides) (1-3)R:(0.5-0.9)M2O:Al2O3:(40-500)SiO2 (R = pyridine; M = alkali metal), and have sp. **surface area** .gtoreq.350 m2/g and consist essentially of ferrierite. The zeolites are manufd. by prepg. a mixt. contg. a source of alkali metal, a source of SiO2, a source of Al2O3, and pyridine in mol. ratio Al2O3:(60-500)SiO2:(10-40)R:(1.5-4M2O):(950-2000)H2O such that that there are 0.05-0.15 mol OH-/mol SiO2, and hydrothermally crystg. the ferrierite at 140-180.degree.. The H ferrierite is manufd. by removing at least part of the pyridine present in th ferrierite, and heating the ferrierite at 500-526.degree., contacting the resulting calcined ferrierite with a source of NH4 ions, and calcining the resulting NH4 ion-exchanged ferrierite- at 200-700.degree.. Linear C>3-olefins are isomerized to the corresponding Me-branched isoolefins at 200-650.degree. using the ferrierite as catalyst.

IT 1344-09-8, **Sodium silicate**
7664-93-9, **Sulfuric acid**, processes
10043-01-3, Aluminum sulfate
(pyridine-contg. compns. for high-surface ferrierite-type zeolite manuf. by hydrothermal crystn.)

RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



○2/3 Al

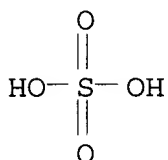
- IC ICM C01B039-44
ICS B01J029-65; C07C005-27
- CC 49-4 (Industrial Inorganic Chemicals)
Section cross-reference(s): 45
- IT **1344-09-8, Sodium silicate**
7664-93-9, Sulfuric acid, processes
7757-82-6, Sodium sulfate, processes **10043-01-3, Aluminum sulfate**
(pyridine-contg. compns. for high-surface ferrierite-type zeolite manuf. by hydrothermal crystn.)
- L68 ANSWER 11 OF 14 HCA COPYRIGHT 2003 ACS
- 124:118101 Synthesis of metal-incorporated mesoporous crystalline silicates for oligomerization of propene. Kim, Jin-bae; Inui, Tomoyuki (Grad. Sch. Eng., Kyoto Univ., Kyoto, 606-01, Japan). Catalysis Letters, 36(3,4), 255-61 (English) 1996. CODEN: CALEER. ISSN: 1011-372X. Publisher: Baltzer.
- AB Mesoporous cryst. silicates were synthesized from **water** glass and H2SO4 in surfactant soln., with incorporation of various metal components such as Al, Ga, or Fe. Mesoporous silicates synthesized without metal incorporation showed the highest thermal stability. Although the thermal stability was weakened by metal incorporation, Al- and Fe-mesoporous silicates with lower metal content (Si/metal at. ratio of 200) maintained high **surface area**, about 600 **m2/g**, after calcination at 1000.degree. for 0.5 h. Even when the same surfactant (dodecyltrimethylammonium bromide) was used as template for prepn. of the mesoporous silicates, the pore diam. and wall thickness were different, depending on gel mixt. compn. The thermal stability of mesoporous silicates was enhanced by increasing wall thickness. The catalytic activity of Al-mesoporous-silicate increased with the increase of pH of the gel mixt. before crystn. Although the catalytic activity of mesoporous silicate was lower than the activity of other zeolitic catalysts like ZSM-5, a considerable amt. of oligomers was produced from propene even at low temps., and the possibility for manuf. of macromols. was confirmed.
- IT **7429-90-5, Aluminum**, uses
(synthesis of metal-contg. mesoporous cryst. silicate catalysts for oligomerization of propene)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT **1344-09-8, Water glass 7664-93-9,**
Sulfuric acid, reactions
(synthesis of metal-contg. mesoporous cryst. silicate catalysts
for oligomerization of propene)

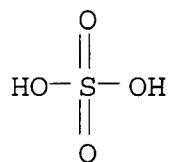
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 67, 78
IT **7429-90-5, Aluminum, uses 7439-89-6, Iron, uses**
7440-55-3, Gallium, uses
(synthesis of metal-contg. mesoporous cryst. silicate catalysts
for oligomerization of propene)
IT **1344-09-8, Water glass 7664-93-9,**
Sulfuric acid, reactions
(synthesis of metal-contg. mesoporous cryst. silicate catalysts
for oligomerization of propene)

L68 ANSWER 12 OF 14 HCA COPYRIGHT 2003 ACS
115:235738 Manufacture of ZSM-5 zeolite fine particles. Ishida,
Hiroshi; Nakagawa, Koji (Asahi Chemical Industry Co., Ltd., Japan).
Jpn. Kokai Tokkyo Koho JP 03193622 A2 19910823 Heisei, 20 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-328371 19891220.
AB The ZSM-5 zeolite fine particles, used as adsorbent and catalyst,
are manufd. by crystn. of raw material mixt. contg. silica-,
alumina-, alkali metal-source and **water** (mol ratio of
SiO₂/Al₂O₃ = 25-40) under hydrothermal synthesis conditions as
follows: (1) sep. prep. a seed slurry (dried solid matter of the
seed slurry has X-ray diffraction pattern of ZSM-5 zeolite and N₂
adsorption **BET surface area** 100-250
m²/g), and (2) adding the seed slurry 10-40 wt.%
(vs. whole reaction system) to a crystg. hydrothermal synthesis
slurry prior to crystn. Addnl., org. substance, such as lower alkyl
urea, can be contained in the raw material mixt. Exemplified raw
material mixt. contains **water glass, NaOH, water**
, Al₂(SO₄)₃, 1,3-di-Me urea, and H₂SO₄.

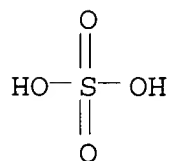
IT 1344-09-8, **Water** glass 7664-93-9,
Sulfuric acid, uses and miscellaneous
 7732-18-5, **Water**, uses and miscellaneous
 10043-01-3, Aluminum sulfate
 (raw material mixt. contg., in manuf. of ZSM5 zeolite, by
 hydrothermal synthesis)
 RN 1344-09-8 HCA
 CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7664-93-9 HCA
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



RN 7732-18-5 HCA
 CN Water (8CI, 9CI) (CA INDEX NAME)

H₂O

RN 10043-01-3 HCA
 CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

IC ICM C01B033-34
 ICS B01J020-18; B01J029-28
 CC 49-4 (Industrial Inorganic Chemicals)
 IT 96-31-1, 1,3-Dimethyl urea 1310-73-2, Sodium hydroxide, uses and
 miscellaneous 1344-09-8, **Water** glass
 7664-93-9, **Sulfuric acid**, uses and
 miscellaneous 7732-18-5, **Water**, uses and
 miscellaneous 10043-01-3, Aluminum sulfate
 (raw material mixt. contg., in manuf. of ZSM5 zeolite, by
 hydrothermal synthesis)

L68 ANSWER 13 OF 14 HCA COPYRIGHT 2003 ACS

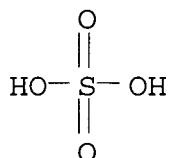
103:217665 Silica gels. Voigtberger, Klaus; Herzog, Guenther; Pfeil, Gisela (VEB Chemiewerk Bad Koestritz, Ger. Dem. Rep.). Ger. (East) DD 223139 A1 19850605, 7 pp. (German). CODEN: GEXXA8.
APPLICATION: DD 1983-258261 19831221.

AB Shaped or unshaped SiO₂ gels with variable pore structures are prepd. by conversion of alkali metal silicates with free or Al₂(SO₄)₃-contg. H₂SO₄ by combining the silicates with .ltoreq.20% SiO₂ in the form of waste liquors contg. 3-10% SiO₂, e.g. SiO₂ mother liquors from mol. sieve manuf. The SiO₂ available in this form does not have a neg. effect on the gel structure. Thus, a homogenized mixt. of 31.2 **Na silicate** conc., 28.5 **water**, and 20.3 kg mother liquor contg. 10% SiO₂ was converted to a spherical gel by known methods by treating with 30.5 kg of an acid soln. comprising H₂SO₄ 3.9, **water** 25.3, and Al₂(SO₄)₃ 1.3 kg. In these amts., 20% of the SiO₂ in the **Na silicate** is replaced by the SiO₂ in the mother liquor. The resulting hydrogel is **watered** and dried and gives spherical gel with 94% SiO₂ yield and sp. **surface area** of 710 m²/g.

IT **7664-93-9**, uses and miscellaneous
(in silica gel manuf., from **sodium silicate** and silica-contg. waste liquors)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**
(in silica gel manuf., with silica from mol. sieve manufg. liquors)

RN 1344-09-8 HCA

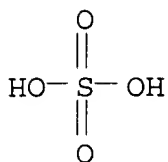
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **10043-01-3**
(**sulfuric acid** contg., in silica gel manuf.)

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



©2/3 A1

IC ICM C01B033-143
 CC 49-3 (Industrial Inorganic Chemicals)
 IT Molecular sieves
 (manuf. of, silica-contg. liquors from, silica gel manuf. from
sodium silicate and)
 IT 7664-93-9, uses and miscellaneous
 (in silica gel manuf., from **sodium silicate**
 and silica-contg. waste liquors)
 IT 1344-09-8
 (in silica gel manuf., with silica from mol. sieve manufg.
 liquors)
 IT 10043-01-3
 (**sulfuric acid** contg., in silica gel manuf.)

L68 ANSWER 14 OF 14 HCA COPYRIGHT 2003 ACS
 101:44120 Zeolite. Rosinski, Edward Joseph; Rubin, Mae Koenig (Mobil
 Oil Corp. , USA). Eur. Pat. Appl. EP 107370 A1 19840502, 21 pp.
 DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL, SE. (English).
 CODEN: EPXXDW. APPLICATION: EP 1983-305747 19830926. PRIORITY: US
 1982-425019 19820927; US 1982-425018 19820927.

AB A zeolite adsorbent and catalyst for cracking and prepg. org.
 compds. by hydrocarbon conversion reactions is designated as ZSM-45
 with M2/nO:Al2O3:>8 mol SiO2 and formula of (0.8-1.8)
 R2O.(0.0-0.3)Na2O. (0.0-0.5) K2O.Al2O3.xSiO2 (R = a
 2-(hydroxyalkyl)triallylammonium compd. where the alkyl is Et or Me
 and x > 8). Thus, choline chloride was added to a KOH- **Na**
silicate soln. and mixed with an acidic Al2(SO4)3 soln. and
 the mixt. allowed to crystallize at 99.degree. over 197 days. This
 zeolite had a **surface area** of 514 m2/
 g.

IT 7732-18-5, vapor
 (adsorption of, by zeolite)
 RN 7732-18-5 HCA
 CN Water (8CI, 9CI) (CA INDEX NAME)

H2O

IT 1344-28-1, uses and miscellaneous

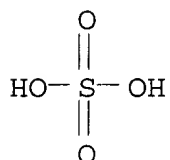
(in zeolite adsorbent and catalyst prepn.)

RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 IT 1302-42-7 1344-09-8 7664-93-9, uses and
 miscellaneous 10043-01-3
 (in zeolite prepn.)
 RN 1302-42-7 HCA
 CN Aluminate (AlO₂⁻), sodium (9CI) (CA INDEX NAME)

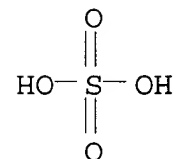


Na⁺

RN 1344-09-8 HCA
 CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7664-93-9 HCA
 CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



RN 10043-01-3 HCA
 CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

IC C01B033-28
 CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Section cross-reference(s): 23, 24, 25, 51, 66
 IT 110-54-3, properties 110-82-7, properties 7732-18-5, vapor

(adsorption of, by zeolite)
 IT 1344-28-1, uses and miscellaneous
 (in zeolite adsorbent and catalyst prepn.)
 IT 62-49-7 67-48-1 1302-42-7 1310-58-3, uses and
 miscellaneous 1333-74-0, uses and miscellaneous 1344-09-8
 7664-93-9, uses and miscellaneous 10043-01-3
 12125-02-9, uses and miscellaneous
 (in zeolite prepn.)